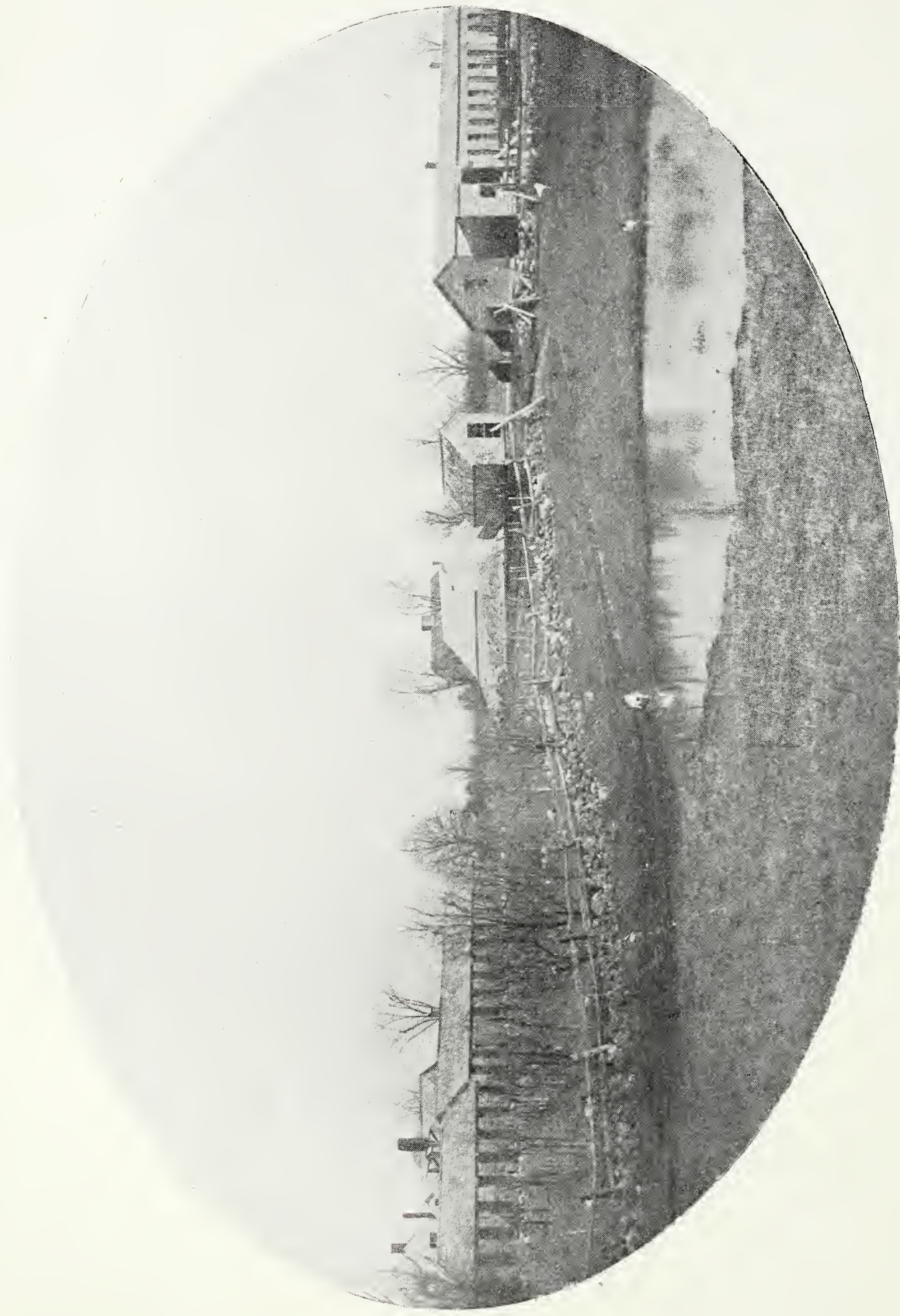


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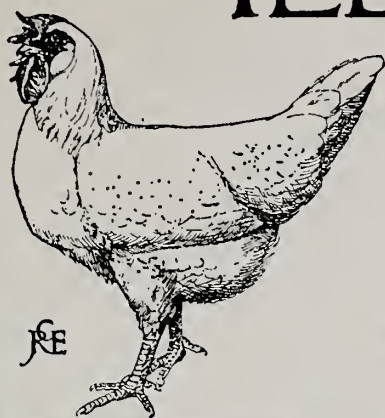


**A VIEW OF THE SOFT ROASTER PLANT OF
FARRER BROS., WEST NORWELL, U.S.A.**

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See Pages 292 to 295.

THE ILLUSTRATED POULTRY RECORD



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EDITORIAL NOTICES.

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The Editor will be glad to consider any MSS., photographs, or sketches submitted to him, but they should be accompanied by stamped addressed envelopes for return if unsuitable. In case of loss or injury he cannot hold himself responsible for MSS., photographs, or sketches, and publication in the ILLUSTRATED POULTRY RECORD can alone be taken as evidence of acceptance. The name and address of the owner should be placed on the back of all pictures and MSS. All rights of reproduction and translation are reserved.

The Editor will be glad to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered by experts in the several departments. The desire is to help those who are in difficulty regarding the management of their poultry, and accordingly no charge for answering such queries is made.

The Annual Subscription to the ILLUSTRATED POULTRY RECORD at home and abroad is 8s., including postage, except to Canada, in which case it is 7s. Cheques and P.O.O.'s should be made payable to Brown, Dobson, and Co., Limited.

The ILLUSTRATED POULTRY RECORD is published on the first of every month. Should readers experience any difficulty in securing their copies promptly they are requested to communicate immediately with the Editor. The latest date for receiving advertisements is the 20th of the month preceding date of issue.

The utmost care is exercised to exclude all advertisements of a doubtful character. If any reader has substantial grounds for complaint against an advertiser he is requested to communicate at once with the Editor.

Poultry Booming.

During the past month poultry questions have loomed largely in the daily Press, probably more than at any other period. For some time the *Daily Express* has called attention to the importance of stimulating Home production, and a statement which appeared in the *Daily Mail*, made by the Marchioness of Salisbury, President of the National Poultry Organisation Society, as to the inability of that body to meet the demands upon it for the best qualities of British eggs, has awakened a wide interest in the necessity for stimulating production. Other journals have followed suit, and it cannot be doubted that great good will result. Probably never before has the shortage of winter eggs been so keenly felt as during the last few months, due partly to the lessened foreign supplies referred to in the RECORD last month, and also to the late period at which pullets came into profit, and now is the time for farmers and others to take up poultry-keeping on a wider scale, in order to meet the needs of our vast population. We welcome most heartily the great prominence which our general contemporaries have given to the poultry industry, reaching as they do multitudes of people who are not regular readers of the poultry Press.

An Egg Train.

A novelty in propagandist work has been arranged, jointly, by the National Poultry Organisation Society and the Agricultural Organisation Society—namely, that early in April a tour will be made in South Wales, for which the Great Western Railway Company is giving special facilities. Two or three cars will be provided, fitted with models of appliances, &c., diagrams of various kinds, and probably live and dead fowls. These will be accompanied by experts

on production, organisation, and marketing, who will give addresses and demonstrations at various points on the railway where stops will be made. It is hoped that in this way the attention of farmers and others will be roused to their missed opportunities, and that a valuable educational work will be accomplished. This will be a new development in Great Britain, but it has been carried out with much success in America, where great results have followed. The time-table has not yet been definitely fixed, but arrangements are in progress, and we hope to give further particulars in our next issue of what is a most interesting and promising experiment.

The U.P.C. Four Months' Competitions.

The outstanding feature of the report upon the Northern and Southern competitions may be summed up in the one word—management. The administration of an egg-laying competition is a vital factor, success or failure very largely depending upon the manner of treatment; but this lesson has never been more sharply enforced than in the contrast afforded by the performances under consideration. The extremes are, indeed, too widely divergent to justify any attempt at close comparison, and the character of the Southern success is such that it needs no foil, but stands independently as an example of the triumph of management. The exposed position of the pens and the constant climatic changes—all more or less inimical to egg-production—were so notable that much smaller results would readily have been excused, a fact that considerably enhances the value of what was actually achieved under conditions far worse than many producers for market have to contend with. Apart from the success from the productive point of view, the general maintenance of health among 120 birds that were out of doors in all weathers is indicative not only of the presence of stamina in the fowls, but also of the skill that preserved it.

North and South.

There is considerable reserve in the report of the Committee with reference to the causes of the failure in the Northern competition, which, in the words of the report, "was ended with under a dozen eggs being laid." The site and the severity of the weather are blamed by the Committee of the club, in addition to which the special representatives, who paid a visit of inquiry and inspection, apportioned some part of the failure to the housing; and, lastly, although the birds have been returned the manager has issued no final report, and the Committee suggest that the conduct of the competition has not been satisfactory. Whilst commiserating the Committee, those who entered their birds must

find cold comfort in the "extreme regret at the unfortunate outcome of the competition," and will probably require fuller information—particularly relative to the report of the visiting committee. The competition at Burnley, under the Northern Utility Poultry Society, has been carried on concurrently within a comparatively short distance of that at Ilkley, and subject to very similar weather conditions, yet the results sufficiently show that any differences between North and South cannot be held responsible to any very material extent. It is, of course, a matter that primarily concerns the Committee and those who entered their birds for competition, but the interest in these contests has now become so general—and is by no means confined to poultry-keepers—that some curiosity must be expected in face of results so divergent as those of the Northern and Southern competitions that have recently concluded.

Scotland and the Poultry Industry.

We understand that the Governors of the West of Scotland Agricultural College propose to follow out the recommendations embodied in the Report of the Departmental Committee on Poultry-Breeding in Scotland, published in April of last year. It will be remembered that the following suggestion was made in connection with the Poultry School at Kilmarnock: "The evidence submitted as to the value of the Poultry instruction at Kilmarnock, under the West of Scotland Agricultural College, shows the importance of such a centre, and we recommend that as early as possible the staff should be increased, the equipment enlarged, and the courses extended, so as to provide not only for the giving of advanced instruction, but also for the carrying out of experiment and research work." To this end the Court of Governors has appointed Mr. Wil Brown, late of the College Poultry Farm, Theale, to the position of supervisor of the department of Poultry Husbandry. Mr. Wil Brown assumes his duties at the end of March, when he will commence the reorganisation of the Poultry section at Holmes Farm, Kilmarnock, and to encourage the industry in the contributing counties.

National Poultry Institute.

The passing of the Development Act of 1909, to which references have previously been made in our columns, affords an opportunity for establishing a National Poultry Institute and Experiment Station on broad and progressive lines, so as to bring our educational system into conformity with modern requirements and with the great advances which have been made in other countries. Hitherto the difficulty has largely been financial, but the Act in question provides

the means for accomplishing such a desirable object to an extent not possible at any previous time. We are glad, therefore, to announce that steps are being taken in this connection, and that a preliminary meeting will shortly be held with a view to securing that support which is essential to ensure success. Already several influential people have consented to join the Preliminary Committee, and the cordial co-operation of others is hoped for; also various societies interested in agriculture and poultry-keeping have appointed delegates to the meeting in question. A scheme has been drafted and provisionally approved by the Board of Agriculture and Fisheries, which body is prepared to do all in its power to support the Institute by active interest in its work, and to obtain adequate grants from the Development Fund, proportionate to the contributions which may be forthcoming from other sources.

Turkey Fairs.

An item which is given this month in our Correspondents' section from our Canadian correspondent tells of the establishment of Turkey Fairs in the Dominion, which appears to have proved very successful in securing buyers. And in the "Report on the Poultry Industry in Belgium," just issued by the National Poultry Organisation Society, it is stated that a society has been formed at Rouquières, in the Province of Brabant.

To its enterprise is due the establishment of an annual fair in the month of September, of which three have been held. The worthy object of these gatherings is to popularise the Turkey in Belgium by inducing the great restaurants to make that fowl a leading dish from October 1 onwards, and to advertise the breed. Prizes are offered for the best birds displayed for sale, which can hardly fail to stimulate production on the one hand, as well as help in the creation of a demand on the other.

In East Anglia the demand is much greater than the supply, and the trade is well organised, but the institution of Turkey Fairs in several sections of the country, with substantial prizes for the best specimens, would do much to stimulate production and improvement of quality. If well announced and held at a suitable time there is little doubt that great numbers of buyers would be attracted. Goose fairs were at one time a feature of the country, but these have declined. Turkeys might well take their place.

The New Spanish Premier.

When the Great International Poultry Exhibition was held at Madrid in 1902 Señor José Canalejos, who became Prime Minister of Spain a few days ago, was Minister of Agriculture. He took a great amount of personal interest in the show, extending to the foreign delegates many courtesies, among which will always be remembered the visit to the State Agricultural College at Mancloa, a few miles from the capital. It fell to

Señor Canalejos to present the delegates to the King and Queen Regent on the occasion of the Royal visit. There can be no question that the success of the show owed much to the support and co-operation of the agricultural authorities under the new Premier's direction.

The Question of Ear-Lobes.

An interesting point has arisen in connection with the standard now being drafted for the Bresse fowl—namely, as to the colour of the ear-lobe, which is of greater importance than might at first sight appear. The French standard says that the lobes should be white, whereas we understand that the Bresse Club has decided on red. Our experience is that the best specimens are the latter, and thus we support the decision arrived at. But it has a further justification—namely, that all the evidence obtainable shows that white lobes accompany heavy egg-production, and red lobes meat properties. Hitherto it has been thought that the colour of the ear-lobe had no practical value, and was merely a fancy point to be determined arbitrarily. If the above is correct, then it is apparent we must revise our ideas altogether. The Bresse, though a good layer, is essentially a table fowl, which fact should be kept in view. We hope, further, that in the standard adopted the meat quality will be kept to the fore.

Eggs for Setting.

It would be interesting to know the value realised annually for settings of eggs, and still more interesting to be able to compare the results from some of the higher-priced eggs. The amount invested in what many people regard as a lottery doubtless runs to many thousands of pounds, and there can be no doubt that the egg season is one of the most profitable from the breeders' point of view. Whether or not it pays to buy eggs from exhibition stock as well as it pays to sell them is, however, quite another matter; but, in spite of numerous disappointments, it is satisfactory to know that rich prizes are occasionally drawn. Only a short time ago we were shown a hen, generally regarded as the best of her kind, that was hatched from a sitting of bought eggs, and there are sufficient cases where winning birds have been hatched to prove that it is not customary, as some people are led to suppose, for breeders invariably to mate up pens of inferior stock for selling eggs from. The puzzle is to find out who sells his best eggs and who does not. At any rate, the trade shows no signs of falling-off, and many fanciers make a point of investing a guinea or two every year in this way. We have heard of working-men saving up their money for months for this purpose, and one can only hope they meet with some measure of success.

THE TYRANNY OF CLASSIFICATION.

By J. W. HURST.

WHEN one comes to think of it, a great deal is accepted upon trust in this world, and confidence in the statements of others is a characteristic of the great majority; and, curiously enough, the antiquity and sufficient repetition of a statement appears to increase the unquestioning credulity of those who are not of the fifty thousand thinkers—with which a cynic has generously credited the British Isles. This mental thralldom of the many to the domination of the assertive few is capable of endless exemplification, but it is the tyranny of classification in its application to breeds of poultry that has aroused the present spirit of revolt against ancient authority—indeed, to some of the afore-said fifty thousand the teaching of the trap-nest (which attacks classification in a vital part) is almost anarchic.

Readers of this journal, who presumably comprise the 50,000, have doubtless discovered the many flaws in the ancient classification that still passes current; but I would enlist their sympathies on behalf of the ignoble vulgar, who still faithfully believe that laying-breeds all lay, and that table-breeds are the only ones fit to eat—and hold to the all-round qualities of the general-purpose breeds. These three articles of faith of the venerable credo are very tenacious of life, even among those in whom experience has planted the seeds of doubt; and although some forms contain certain modifications, the fallible factor remains to justify the sceptic. The difficulties of the uninitiated are, moreover, further increased by the mutability of standards, in face of this hoary immutability of classification; and the trouble is further accentuated by the widespread inability to understand the vast difference that may, and often does, exist between the individuals of a breed as bred for use or show. To say that this is a matter for simple discrimination is to ignore the fact that all are not discriminative, than which nothing is more patent—and all must enter poultrydom by way of the inexperienced (and more or less ill-instructed) novitiate. It is true that the lessons of experience are the most valuable, but the toll exacted by the tyranny of classification is often too exorbitant. Let us particularise, relative to the three articles of classified faith:

LAYING-BREEDS.—There is something that is very seductive to the beginner in this description—the obvious intent of which is so self-evident, “I want eggs, therefore I will acquire fowls of a laying-breed, and they shall give me

my heart's desire in abundance.” This fetish of classification remains side by side with the modern developments of some “general-purpose” breeds—the latter in more or less carefully-selected strains, it is true, but does not this fact still further jeopardise the reliability of the classification in other directions? The times are changed, but the classification is not, yet how is it to be reconciled with the fact that in the twelve-months' laying competition a White Leghorn produced 36 eggs, against the 216 of a Buff Rock? In face of this test taken as a whole, how does classification account for the general non-success of such a champion “laying-breed” as White Leghorns, and the winning achievement of the “general-purpose” Wyandottes? The confusion of the classification becomes worse confounded by the result of the last six-months' competition, in which Rocks, Orpingtons, and Wyandottes put to shame the classified reputation of a typical “laying-breed,” which was as regards some scores beaten by a “table-breed”; and the fag-end of the list comprised an inextricable rout of all classes—“laying,” “table,” and “general-purpose” breeds, all striving to live up to the first designation, and all ignominiously failing.

It would be a weariness of the flesh to wade back through the lists of past competitions, upsetting as they are of various theories implied in classification; but it is impossible to refrain from mentioning the appearance upon one occasion of a “table-breed” in the second place, with a “laying-breed” in the first, and a “general-purpose” breed third. The more such records are examined in the light of ancient but surviving classification, the less one wonders at the lost state of the inexperienced who are subject to its tyranny.

TABLE-BREEDS.—This description is also faulty, and mainly because of its inadequacy. If it were sufficiently comprehensive, it would trench upon the preserves of the “general-purpose” class, which have already been sapped in another direction, as we have just seen. The “general-purpose” breeds appear to occupy the precarious position of a buffer state, being open to the attacks of egg-producers on the one side and of chicken growers on the other—to the upsetting of that perfect equilibrium implied by the classification. Relative to results, the bewildered novice might well ask: “If a breed is developed for a particular purpose, what happens to the remainder of the general-purpose?” The

correct answer would, of course, involve reference to other issues, as will be shown subsequently, and the main point is the insufficiency of the classification without lengthy explanations regarding the modifications of practice. In short, the classification so commonly in vogue is not that plain guide to economic characteristics that its plain wording suggests.

It is at least interesting to see what a Departmental leaflet has to say relative to such a subject, and if we turn to No. 176—issued by the Board of Agriculture—we find that the pure breeds recommended for table purposes are: Dorkings, Sussex, Old English Game, Faverolles, Langshans, Orpingtons, Plymouth Rocks, and Wyandottes. It is fairly confirmatory of the foregoing remarks that the last four breeds suggested for the use of fatteners form the backbone of the “general-purpose” classification, yet the beginner in table-poultry production would find no mention of them if he turned up his table-book. He would, however, find the Dorking, which will only thrive in some favoured situations and is more useful in a cross; he would find the Indian Game, which is slow of growth, and chiefly of use for crossing with the last-mentioned; he would find Old English Game, which is smaller than in former days, and in common with other Game inclined to hardness of flesh; he would find the Faverolles, which usually requires crossing on account of coarse-

ness of flesh; and he would perhaps find the Sussex (in a modern edition) although this pre-eminent table-breed is by some included in the “general-purpose” list! But the abrupt dogmatism of classification conveys no hint of the modifications suggested—or of any others.

GENERAL-PURPOSE BREEDS.—Here we have the classification of theoretical balance, the fore and aft adjustment of the “lining” method; but, as we have seen, the chief breeds belonging to the class have wobbled from their centre of gravity, according as the strings have been pulled by egg- or flesh-producers. This see-saw of practice has done much to disturb the equilibrium of the theory—and an asterisk should indicate an explanatory footnote in the classification. The theory is a pretty and an interesting one, but one wonders in how many strains of “general-purpose” fowls the miscellaneous character has been evenly preserved.

Criticism may perhaps be more easy than invention—although the point is debatable—and, anyway, destruction is less difficult than construction; but what is wanted is reconstruction. The ancient classification needs revision, amendment, and annotation to minimise its tyrannous influence upon the selection of the beginner in poultry-production. The word “strain” should occupy a prominent position in its wording, and “laying” is not the only prefix it should carry.

VARIETY IN EGG-SHELLS.

By H. DE COURCY.

THE egg may be regarded as a very neatly made-up parcel of concentrated food, available in various forms for the nutrition of man, and as such it is one of the most valuable products of the animal kingdom. Broadly speaking, it has three constituent parts—the yolk, the albumen, and the shell, of which the two former are edible and the latter inedible. Thus we see that the shell of the egg is merely a packing-case, but as such it serves several useful purposes, and it is not too much to claim for the shell that without it the two edible portions of the egg would be of comparatively little value. It is therefore essential that the shells of eggs should be strong and well formed, in order that they may capably fulfil their purposes, which may be briefly described as protective and preservative. The shell protects its contents not only during the process of incubation but also against the dangers attending

handling, sorting, packing, transmission to a distance, cooking, &c., and it preserves its contents for a considerable length of time against contamination from the germs which would cause decay and decomposition in an incredibly short time, were the edible portion of the egg exposed to the air without the protection of shell and enveloping membrane. Thus we find by experience that if a shell is cracked or pierced, or if it is particularly thin, the contents will remain fresh in warm weather for not more than a few days, whereas a sound, strong shell, although porous as all shells are, will preserve its contents in an edible condition for many days.

The influences affecting strength of shell are chiefly the breed of the fowls, the conditions under which they are kept, the foods they receive, and the state of their health. Thinness of shell is one of the evil effects of domestication and the direct result of increased production.

Thus, if a hen were wild, she would lay perhaps thirty eggs in a year and hatch them in two lots, and there would not be a single thin shell amongst them. But in domestication she produces perhaps one to two hundred, and the strain of providing shells for them is enormous. This statement is borne out by the fact that the shells of eggs laid by hens which lay an egg every second day are usually stronger than those of hens which lay three or four eggs in five days. Moreover, it is found that brown shells are generally stronger than those which are white, the explanation being that brown-shelled eggs are produced in fewer numbers, by larger hens, and that the period of production is more evenly divided over the whole year, winter and summer.

The conditions under which fowls are kept have a direct and decided influence upon the strength of the shell, and, when fowls are running at large, considerably less care is required to produce strong shells than when they are confined to pens. There are two causes for this. First, hens at large can pick up almost all the shell-making material they need, whilst those closely penned can get only that which is supplied to them by their keeper; secondly, fowls in confinement are liable to be very much fatter than those running at large, and consequently the reproductive organs of the former are in a less healthy condition for the production of strong-shelled eggs than are those of the latter. The foods supplied and the manner of feeding have also a direct influence upon the quality of

shells. Hens which are overfed upon soft foods of a highly fattening and heating nature will always produce much weaker shells than hens which are fed largely upon whole grain, fed sparingly, and supplied with sufficient shell-making material. Shells are largely constructed from the lime in the foods, but this is not enough, and it is always advisable to supply lime in other forms. Lime for shell-making may be given in the shape of old mortar or plaster, which the hens will pick if it is thrown down in their runs. Some people mix a small proportion of air-slacked lime in the mash, but this practice cannot be commended, as it may easily become detrimental to health. A small quantity may, however, be placed in the drinking-water, if it is observed that the egg-shells are not as strong as may be desirable. Fowls will also pick up much shell-making material from grit, gravel, sea-shells, ground oyster-shells, &c., if these are placed in their runs. Strength of shell is largely dependent upon the condition of the hen's health, and in almost all cases those abnormally large and small eggs, as well as those which are mis-shapen, are produced by hens whose reproductive organs are out of order. A change of food and a liberal run will often remedy such affections, if tried before the case has become chronic, but it is inadvisable to breed from hens which lay abnormal eggs, and in selecting eggs for hatching great care should be exercised to take only those which are strong-shelled, of normal size, and well formed.

WINTER FOWLS.

ANOTHER OPPORTUNITY FOR BRITISH POULTRY-BREEDERS.

By EDWARD BROWN, F.L.S.

THE history of the soft-roaster fowl is interesting and suggestive. Twenty years ago it was practically unknown. A firm of bootmakers named Curtis found competition on the part of big factories overwhelming, and they were compelled to discover some other means of livelihood. Poultry-breeding attracted them, and they took it up as a business, but not upon ordinary lines. Ultimately the production of a high grade of table-poultry for the Boston Market became the leading object, for demand grew with increased supply. It was not, however, chickens, but well-grown, large-sized fowls, weighing from 6lb. to 12lbs. each. Gradually others came into it, not as rivals but as co-workers. Within a radius of a few miles from West Norwell, in Massachusetts,

scores of thousands of these birds are reared every year, and the prosperity of that district is proof of what can be accomplished by means of fowls, when carried out commercially. The methods adopted are noteworthy, and the trade is highly organised from start to finish, deserving of the careful attention of those who are concerned in the poultry industry and in development of the country. That success is largely due to Mr. J. H. Curtis is universally acknowledged. The confidence reposed in him by producers and traders alike is fully justified by the results. He is the hub of a thriving industry.

The soft-roaster business can best be dealt with under several headings—namely, (1) Breeds; (2) Methods of Production; (3) Rearing and

Growing ; (4) Feeding ; (5) Marketing ; and (6) Results—with suggestions as to how far the system could be adapted to our conditions.

BREEDS.—A prime necessity for this trade is that the fowls shall make large birds, to which end they must be slow in growth, but when ready for killing shall carry a large quantity of soft flesh. The rapidly-maturing races would be of no use for this purpose. Those generally favoured are White Plymouth Rocks, for small roasters, and light Brahmas for the larger winter birds. To those who are alone familiar with English Brahmas, the last-named appears a strange choice, as our heavily-feathered exhibition birds are not of much value for practical purposes. But the Americans have retained

the term “poultry-farm” been more correctly applied that at South Norwell, where upon farms of the size mentioned 3,000 to 6,000 birds are reared and marketed annually. The soil is not very good, and as it has been allowed to go out of cultivation there is plenty of scrub, with a fair amount of woodland. The poultry plants are well equipped, provided with breeding-yards, incubator-sheds, and brooder-houses for the primary stages, and with colony-houses for the growing chickens, which are kept in large numbers upon the area allotted to them. In fact, at one place visited there were upwards of 2,000 birds on ten acres, accommodated in 43 colony-houses, each 7ft. by 6ft., holding 50 chickens. The open-front house is largely used in this district ; in fact, one of



A HOUSE FOR WEANED CHICKENS ON AN AMERICAN SOFT-ROASTER FARM.

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more of the original type, and have not sacrificed flesh for feather. Both of the breeds named have yellow flesh and skin, which is in accordance with American ideas, but would not meet European requirements. We have several breeds which would be of equal value on this side and fit in with our market demands.

METHODS OF PRODUCTION. — As already stated, the growing of soft-roasters is extensively carried out in the district named, and by specialists rather than ordinary farmers. It is true that the occupations are fairly extensive in area, varying from 30 to 60 acres, but such cultivation as takes place is entirely secondary to the poultry work, which easily takes the first place. In no case which has come before me has

the leading advocates of the system, Mr. Joseph Tolman, is a South Norwell resident. The whole system is intensive, but is applied in a sensible manner, for the ground is utilised for fruit-growing or annually ploughed up and planted with rye grass to utilise the manure and sweeten the soil, and the same area is not used in successive years for growing stock. At one of the best plants visited I found two long range-houses with divided yards for the breeders, wherein 360 hens are kept to produce eggs for hatching. As a rule, however, separate colony-houses are employed, which, in my judgment, is the better plan, for, with permanent houses, sooner or later danger will arise from tainted soil where such large numbers of fowls are kept. One

important point in this connection should be mentioned—namely, that to a considerable extent this is an out-of-season business. Hatching of the small soft-roasters begins in August, and is continued through the autumn, after which the larger birds are brought out. The former are marketed in the spring, and the latter a little later. At one farm I found that all the chickens are marketed by the end of May in each year, and at others a considerable number are carried through the summer to be sold in the autumn. Some of the breeders use only eggs for hatching produced upon their own plant, whilst at others purchases are made for that purpose. There is, in fact, a great amount of variation in method, which is all to the good, as in this way widened experience shows which yields the greater results.

REARING AND GROWING.—Whilst incubators are largely used for hatching, hens are also employed as they become broody, but the rearing is almost universally artificial. For this purpose brooder-houses of the usual form are in use, in which the chicks are kept for the first month or five weeks, in fact, as long as they require heat, after which time they are transferred to the colony-houses already mentioned. These are dotted about the land allocated to the chickens for that year, and no fencing is used so that they

of the term of their existence, which will be six to eight months in all. Even though the breeds kept are slow in growth, yet the natural order of things would be for them to become hard in flesh, especially the males. That change does not take place in pullets until they begin to lay, but as the system does not tend to early maturity, they are killed before the ovaries become active. To keep the cockerels, therefore, in soft condition, they are caponised, the smaller roasters when weighing 1½lb. to 2lb. and the larger when they reach 3lb. The result is that the soft chicken flesh is retained, and these birds can be kept in large numbers together without any of the troubles or loss which would otherwise arise. In fact, it may be accepted that caponising is an essential factor in the production of soft-roasters. Another important point is that capons are less active and more lethargic than cockerels would be, and thus grow to a greater size, have softer bones, and lay on more flesh than would otherwise be the case.

FEEDING.—One very interesting point is the method of feeding, which is simple in the extreme and economical of labour. As a rule dry feeding during all the stages is almost universal, and the food is supplied in hoppers so that the birds can eat as much as and when they like. At first this



LIGHT BRAHMA SOFT-ROASTERS.

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can mingle together freely. Provision is made for the younger birds to prevent their being interfered with by the older, as they are placed apart. In these colony-houses they live for the remainder

consists of the regulation chick feed, varied in accordance with individual ideas, and later it is usually cracked Indian corn and wheat and beef scraps, but in some cases what is known as dry

mash is partly used, a mixture of bran, middlings, alfalfa or clover-meal, and low-grade flour. In this respect, however, there is considerable variation as to the mixtures employed. At one time Indian corn was used to a greater extent than is now the case. Upon this point each country must find out what suits it best. Green food, such as cabbages, cut rye grass, &c., is freely given, and where dry mash is used a plentiful supply of fresh water is necessary.

MARKETING.—Success must in all cases depend upon marketing. The system adopted in the South Norwell district is unique. It is here where Mr. Curtis comes in, in which direction he has rendered so great a service. At one period an extensive breeder, gradually he has left that to others as production has increased, and devoted himself to the final stages. It may be explained that the birds grown are not fattened in any way. As they ripen—*i.e.*, come into the most fleshy condition, which will be the case at a time varying with the breed—they are selected out. In many cases Mr. Curtis does that himself. He knows where the birds are, and selects in accordance with trade requirements. At the time of my visit he was paying 27 cents (13½d.) per pound live weight, which for birds weighing 8lb. to 10lb. was exceedingly good. The margin which Mr. Curtis allows is 3d. per pound, for killing, loss of weight and marketing, and in this respect the breeders are well served. The arrangement is essentially a fair one. At Mr. Curtis's place the birds are killed, plucked, and chilled, and the next day he goes with them to Boston, where, by his knowledge of the market and close

touch with buyers, he is able to secure the best prices and defend the interests of those concerned. I cannot but think that the success of this industry has been largely owing to the fact that breeders have been directly represented at the selling end by one who, whilst making a fair profit out of the transaction, has looked after the producers and defended them in every way. This is an aspect of the question which I cannot enlarge upon now, but it deserves fuller consideration, as there can be little doubt that producers in this country have lost, and lose, considerably by present methods.

RESULTS.—Financial results must determine whether any pursuit is successful or not. The evidence which I gathered was to the effect that it is a money-making business. The cost of production is said to be 6d. to 7d. per pound, live weight, at the time of killing. As mentioned in the "Report on the Poultry Industry in America," one man stated that he had reared and sold 4,000 birds that year, the net profit on which was between £300 and £400. Another had reared 5,000 birds, of which 2,000 had been sold. He expected to clear £600 profit.

Such is a brief sketch of an industry which is capable of adoption in this country, where it would in course of time yield equal results, for the trade can be created. What we want, first of all, is a number of breeders in one district to join forces and go in for this type of fowl on similar lines to those described above, and to form a local co-operative society for preparing and marketing the birds. Isolated action would not yield the same returns. Probably, methods of production and feeding might be modified with advantage.

THE POULTRY PLAY.

ON the evening of February 8 M. Rostand produced, at the Porte St. Martin Theatre in Paris, the "Chantecler" play for which Paris had been waiting, and about which it had been speculating, for some seven years. The plot of this poultry drama is simple in the extreme, and most of our readers will already have gathered its substance from the newspapers. We may content ourselves, therefore, with recapitulating its outline and such of its features as seem essential to the purpose of this article. Chantecler, then, the lord of the farmyard, the gallant, idealistic ruler—as he believes himself—of creation, who summons the sun itself to rise at his imperious crowing, falls in love with a Hen Pheasant whom he has saved from death, and goes honeymooning with her in the depths of the forest. There he, soothed by the song of the

Nightingale singing in the darkness, sinks into deep slumber, and awakes to find that the sun—that sun which had always waited for his call before venturing above the horizon—had actually dared to rise without his permission. Distraught with the shock of this one great illusion shattered, he returns to the farmyard to resume his authority, more from a sense of duty than aught else; but the misery of his humiliation weighs on his soul, and the dream of his superb supremacy is gone.

The production of a play like this offers to the reflective public, and more particularly to the reflective poultry-keeper, much curious food for thought. It is the first occasion on which poultry have formed, so to speak, the whole substance of a play, and have been represented on the stage with such amplitude and magnificence.

Bird plays there have been before; many, probably, that one has never heard of since "The Birds" of Aristophanes drew an Athenian audience as M. Rostand has drawn a Parisian one. But we cannot call to mind a production in which domestic poultry have taken the stage as they do in "Chantecler," dominating and forming the central theme of a drama of animal life. A further circumstance of this production is that amazing pains have been taken to render the characters of the poultry-yard interesting, not only for their symbolic suggestion, but in themselves as poultry. We are told that over a hundred breeds are represented; the scenery has been designed with a due regard for verisimilitude, and the ordinary sights and sounds of the farmstead and its inhabitants are, we believe, reproduced with extraordinary skill. The play, in short, is meant to be as realistic a picture of poultry life as it is possible to obtain by stagecraft, fettered as this is by conventions. This realism, therefore, which cloaks the poetic symbolism of M. Rostand's drama, is its author's first achievement. The second in importance—if, indeed, it is not really more important than the first—is that its presentation in so realistic a guise did not make the audience laugh. To the average English mind there is something comic in the mere idea of a man or woman dressed up—at enormous expense—to look like a fowl. Such analogies as most of us are wont to draw between fowl and human personality are generally humorous, or satirically humorous, analogies. We see a lady grasping her skirts in both hands and steering an erratic and wavering course across a crowded thoroughfare, and we find in her bewildered uncertainty a resemblance to that of a hen striving to elude a motor-car or a bicycle on the high road. The "stout party" clambering into a hansom cab has more than once suggested a member of one of the heavy breeds essaying to enter a complicated specimen of the trap-nest. When we compare the young mother with her children to the hen with her chickens, it is generally in unmistakable, if kindly, ridicule of the young mother. If invited, therefore, to witness a poultry play such as "Chantecler," written in rhymed verse, and clothed with most of the appurtenances of classic drama; if treated, before the rise of the curtain, to the concerted imitation of a farmyard hurly-burly, and called upon to "thrill" at the sudden appearance of M. Guitry as Chantecler on the top of a wall; if urged to feel the feminine seductiveness and seriously accept the arch scheming of an actress decked out as a hen pheasant, the apparent probability is that we should be very apt to see the ludicrous side of the picture before the sublime,

and laugh. This, at any rate, is the logical inference from our usual habit of humorous analogy. But in practice it is likely that our logical calculations would have been upset. To acknowledge less would be to admit that human poetry expressed through the dramatic medium with the finest dramatic art would touch us less readily than it did the spectators at the Porte St. Martin. For it is just M. Rostand's poetry, the poetry not only of his verses, but of his scheme, that triumphs over logic, and raises "Chantecler" so very far above the merely ludicrous. It is the poetry that makes its dignity and its realism—the realism that soars above stage conventions—that of the high truth.

It is a very high truth that the idea of M. Rostand embodies, and not less high because it is anything but novel. What strikes us more than anything else is that the idea of "Chantecler," which came to M. Rostand one day when he passed by an unknown farmyard, might have come—very likely has come—to many people with more than merely material instincts, who spend their lives in supervising such farmyards. It is a variation of the idea that inspired Mr. Kipling's "Jungle Book," and M. Maeterlinck's "Life of the Bee," and "Æsop's Fables," and other works of literature in which the animal kingdom is treated from a point of view other than that of the ultra-superior human one. The truth that it expresses is simply that between mankind and the lower animals there exists not only an analogy, but a sympathy—an indefinable yet potent sense of instincts common to both, of nobility and meanness, courage and cowardice, pride and humility, that are shared in common. In the olden days when man was a savage, the recognition of this was much stronger than to-day; man respected animals more, and animals respected man a good deal less; and it is back to those days that one must go for the origin of that full sympathy which we are too apt to talk of as an empty sentiment. When civilisation uplifted man to his throne of intellectual supremacy, it also encouraged him to think of the other races of the universe as subject races, and to lose not only his fear of but his sympathy with them. In recent years, however, a higher civilisation has done something to restore the latter. We not only treat the animal kingdom better than we did; we think more about it and try to understand it better. We are strangely drawn to books about animals and curiously attracted by plays that picture their life. While we wait for M. Rostand's "Chantecler" to cross the Channel, we flock feverishly to the Haymarket Theatre to see M. Maeterlinck's very beautiful "Blue Bird." And many of us who do not think about some things at all, or who do not think about

them consciously, are yet able to feel the influences of their attraction.

Poultry-keepers who talk about the fascination of poultry-keeping explain it by the scientific interest, the æsthetic interest, and what not; but the interest that comprehends these and a good deal more is not explained, simply because it is hardly explicable, or perhaps requires a poet to explain it. We are not all poets, but most of us

are conscious of the indefinable something that draws us to poultry, of an attraction stronger and more subtle than any that can be defined, that leads us to recognise a relationship between our feathered stock and ourselves which we can no more ignore than express. We take off our hats to M. Rostand for suggesting, through symbolic "Chantecler," the nature of this impregnable bond of union.

WHO'S WHO IN THE POULTRY WORLD.

MISS N. EDWARDS.

ALTHOUGH it is many years since women entered the field of professional poultry culture, few of them can claim as big a success as has been achieved by Miss Edwards, of the Coaley Poultry Farm,



MISS N. EDWARDS.

Gloucestershire. Miss Edwards is President of the Ladies' Poultry Club, Vice-President of the Buff Orpington Club, a winner of challenge cups and other prizes at the most important shows in the country, and an exporter to all parts of the world. In July of last year she journeyed to Canada to attend the International Council of Women held at Toronto, in order to read a paper on poultry, and her theoretical and practical knowledge of the subject is further demonstrated by the fact that over a hundred pupils have studied under her guidance.

She started poultry-keeping modestly, about fifteen years ago, with a stock of twenty fowls. An increase of stock followed the development of a thriving business, which has recently reached such proportions as to necessitate her removal to a larger farm in the same neighbourhood, but, having the advantage of being nearer to Coaley Station. She has bred Buff Orpingtons for about twelve years, and as lately as last November took the 15-guinea Club Challenge Cup at the Crystal Palace for the best cockerel of this breed in a class of thirty-nine. It is noteworthy that about ten years ago she sent to the United States a pen of Buff Orpingtons that were the first of their kind to enter that country. And she originated the Coaley Fawn Ducks and the Coaley Buff Game.

The Ladies' Poultry Club, which was started some two years ago, has prospered greatly under her presidency, and has already held two good shows; and there can be little doubt that her administrative ability and enthusiasm have contributed largely to this result. Her own establishment boasts one of the biggest incubator-rooms in the country. She is employing no less than twenty-six machines, mostly of large egg-capacity, during the present season.

MR. ROBERT ARMITAGE, M.P.

YORKSHIREMEN have long been noted for the interest they take in poultry-breeding. In our issue of January, 1909 (Vol. I. p. 233), we gave a short description with illustrations of the Farnley Hall Poultry Establishment, near Leeds, owned by Mr. Robert Armitage, M.P., but as that gentleman has successfully

emerged from the General Election as member for Central Leeds, and is a practical poultry-breeder, taking a keen personal interest in it, we include him this month in our gallery of notabilities. Mr. Armitage is a busy business man, connected with various enterprises, the



MR. R. ARMITAGE, M.P.

chief of which is the Farnley Ironworks, founded by his ancestors ; five years ago he was Lord Mayor of Leeds ; he is on the committee of the National Poultry Organisation Society ; so that his energies embrace poultry and politics, industrialism and municipal affairs, in all of which he has attained a considerable degree of distinction.

For many years Mr. Armitage kept poultry at Farnley Hall without taking much interest in them. Some seven years ago, largely with a view to encouraging the men in connection with the Farnley Ironworks, he started a poultry-farm on the best lines, engaging a practical poultrywoman to take charge of it. His first pure breed was barred Rocks, and later White Wyandottes. The latter succeeded very well, but the smoke and dirt of the Leeds district did not enhance their appearance. Now Buff Orpingtons, Black Leghorns, and Brown Leghorns are kept. Mr. Armitage has given considerable attention

to improvement of the laying quality. Every year about 160 of the pullets are trap-nested, and from these the breeding-stock is selected. It is satisfactory to know that the poultry industry will be represented in the new Parliament by practical breeders, who can speak with authority in defence of its interests.

MR. W. J. GOLDING.

THE Hayward's Heath Poultry Show has by now attained to one of the first positions among provincial events. It is interesting, therefore, to recall the fact that it was founded by a youth of twenty in the person of Mr. W. J. Golding, who, as its chairman, still continues to guide its destinies. Mr. Golding has combined poultry with general farming. At the Westwood Poultry Farm, on the Weald of Kent, where he has resided since his marriage in 1908, he grows cereals, roots, and fruit on an extensive scale, the farm extending over 250 acres of pasture, arable land, and woodland. He has, moreover, developed a big dairying business, and owns some few good horses.

It was, however, in Hayward's Heath that he was born and bred, and it was here that his talent for organisation found an outlet in the formation of the big show referred to above, and also, partly, in that of the Buff Orpington Club, of which he has been Hon. Secretary and Treasurer for the past seven years. Besides this office, he enjoys the distinction of being a Vice-President of the Poultry Club, and an active member of the committee of the Kent branch of the same



MR. W. J. GOLDING.

Vice-President of the Grand International, and Joint Hon. Secretary for the projected Combined Specialist Club Show. He has judged at the Dairy, Palace Grand International, and elsewhere.

FANCY & EXHIBITION

TOPICS

CONDUCTED BY W.W. BROOMHEAD

THE POULTRY FANCY IN 1909.

A REVIEW OF THE BREEDS.

By WILLIAM W. BROOMHEAD.

(Continued from page 247.)

THE Malay, a species of Game-fowl no doubt, but not recognised as such in Fancy circles in this country, may come into its own once more. For some years now it has been looked on as one of the decaying breeds. The Malay fowl was in evidence in the extreme south-western counties of England in the early part of last century and some years prior to the Cochin mania; it had a vogue, then a decline. But since a new club was started for it last year, known as the Malay Breeders' Association, and the society took good care to have the birds staged at shows in specially constructed pens, it did much to bring the breed once more before the public.

To most show-goers the Malines is a new breed. Classes have rarely been put on for it, but it is new only in the sense that it has not often graced an exhibition pen in this country. However, an English club was formed for the breed towards the close of last season, so we may expect to see Malines at some of the shows this year. There are several varieties—Cuckoo, White, Black, Ermine, Gilded Black, and Silvered Black, not to mention all—as well as the turkey-headed kind with triple comb; but it breeders in this country wish the Malines to be popular they will be well advised to keep to the single-combed variety in the Cuckoo colours and marking, the Coucou de Malines, and leave the others on the Continent!

Minorcas were as strong as ever at the 1909 events, and the breed has many staunch supporters. I am glad to see that the Rose-combed Black Minorca has come ahead so well, and this without much booming. It is, no doubt, an excellent variety, although by its somewhat resembling the Black Hamburgh it was not received with "open arms" when it first came out. The type, however, of the best specimens of last year was equal to that of the single-combed variety. The White is not often seen; but it is perhaps surprising that with the influx of

new breeds and varieties the Black still continues well in the front rank. It must not be forgotten, however, that, beyond being a charming fowl to breed for the show-pen, the Minorca is one of the best kinds for the back-yard poultry-keeper, laying well in small places and producing large eggs, which, despite their pure white shells, always meet with a ready sale.

Orpingtons—there never was such a breed! Each variety, and there were seven of them when I penned



A CHAMPION BLACK ORPINGTON.

The property of Mr. W. M. Bell. [Copyright.]

these notes, has a club to itself, although not much had been heard of those for Cuckoos and Blues. The Black, the Buff, and the White, however, did remarkably well in 1909; in fact, the clubs for the first two are probably the strongest specialist poultry clubs in this country. Type in all three varieties showed a great improvement, and many of the winning specimens of last year were as broad across the saddle as a Cochin. The Spangled and

the Jubilee, now that each has its own club, may find more supporters ; but it is as well to recollect that the Variety Orpington Club has done much to bring those two varieties, as well as the White, into prominence. The Blue and the Cuckoo are yet "in the rough." It is very difficult to get a really good self-blue devoid of black or lacing, but it may come with time. Those fanciers who breed the Cuckoo appear to be undecided whether to follow the true Cuckoo colour and markings or the black-and-white barring of the modern Plymouth Rock. The former is decidedly the better and in keeping with the name ; it is the more difficult also to attain.

There has been no falling-off in Plymouth Rocks. Never, in fact, do I recollect seeing more charming specimens of the Barred than at the later shows of 1909. They were, indeed, about perfect. But breeders could, I think with advantage, pay rather more attention to type. There are four recognised varieties of the Plymouth Rock—viz., the Barred, the Black, the Buff, and the White ; and, although the first-named is by far the most popular, the others have done well, and there was somewhat of a revival in Blacks. Attempts at new varieties were not unknown, and two were the Columbian and the Partridge. But they have not had a good reception !

Polish, Redcaps, and Scotch Greys, the next to follow in alphabetical sequence, may be taken *en bloc* for the purpose of these notes. One might almost say, as regards English shows, they are becoming extinct. An odd Polish or two was exhibited in the "any other variety" classes—a white-crested Black, a Silver-laced, and, I believe, a Chamois, perhaps others—but there was no great display of them last year. Redcaps turned up at two or three events where special classification was put on for them ; but, as a rule, they were practically confined to Derbyshire shows and one or two others in the Midlands. Scotch Greys did not go, in the South at least, and I did not see more than a dozen, if as many, at the Northern shows which I visited. They appear to do best in Scotland, albeit they are splendid fowls, and, no doubt about it, have been blended with advantage into some strains of Plymouth Rocks.

There has been a steady advance in Silkies. The breed is a quaint one, and it requires all the fancier's art to get it up for show, to have it exhibited in that ragged condition which is one of its charms, and which removes from its appearance any indication of hard feathering. The breed, however, was in a healthy state last year, and the appearance of the names of novices among the lists of prize-winners, and well up, too, is a good sign that the Silkie can hold its own. Of the Spanish, the breed that was indeed *the* breed some twenty years ago—when it flourished amazingly in the West of England and around Bristol—what can be said ? It has gone out of fashion long since in this country ; but the fact that two or three odd specimens turn up in the "any other variety" classes at the classical events of the season, and generally manage to take the chief honours, shows that the Spanish is not yet dead !

Now that fanciers of the Sussex have opened their ranks and not kept the breed so closely to the county of

its origin, it bids fair to take its place with the most popular fowl of the day. The breed was well represented at the 1909 events, and although the strongest classes were got together at the Sussex shows, and others within a few miles of its borders, signs were not wanting that it made grand headway. A few Orpington type birds got into the prize lists at one or two events, chiefly in the Speckled variety, but there was a decided preference for type shown by most of the judges. The general colouring and marking of the Speckled, too, were better ; and the same may be said of the Light and the Red—with the last-named variety, however, it would be decidedly advantageous to omit the black striping on the neck hackles and confine the colour to red only. When mentioning the Sussex, one must not overlook the Brown. The variety is not included in the standards issued by the Sussex Poultry Club. Nevertheless it flourishes ; and since the original club will not recognise it, those who fancy the variety have a club to themselves, and mean to get the fowl's good points recognised.

The Wyandotte Fancy is still well to the front, despite a rumoured wrangle in one of the clubs. The chief point to mention, taking the breed as a whole, is type. In most branches this, in my opinion, has been departed from to a greater extent than was necessary. Too many Wyandottes were shown with long backs and legs ; and in two or three it almost looked as though breeders and exhibitors were endeavouring to emulate the Langshan, modern ! It may here be mentioned that the breed should resemble the Brahma in shape of body and length of limbs ; and it will be well if those who have the good of the breed at heart will recollect this and pay more attention to type during the coming season. Of the varieties, the White probably holds the highest position as regards popularity. Blacks and Columbians have also gone well ; but—dare I mention it?—the Partridge appears to have fallen off somewhat, and its popularity seems to have waned. Blue-laced were not very strong, neither were Buff-laced ; and the Silver-pencilled seems to have lost ground. Buffs, again, were rarely met with ; but both Gold-laced and Silver-laced made good displays. There have been attempts at new varieties. The Blue, a self-coloured variety devoid of lacing, was the most popular of these ; but it is still "in the rough." There is, however, something of a boom in self-blues just now, so it will continue to have its supporters. The White-laced Black, of which we heard so much at the beginning of the season, has not apparently caught on, and the only specimens of it that I did see left much to the imagination. The Red is another new variety ; but wherein it differs from the Rhode Island Red remains to be seen.

The last on the list of fowls is the Yokohama, known also as the Japanese Game, the Japanese Long-tail, and the Phoenix Fowl. It is a select breed, as it needs must be, since comparatively few fanciers have the accommodation for fowls with such remarkably long and sweeping tails ; and, moreover, not many poultry-keepers in this age of utility would plump for the

Yokohama as a likely breed for the production of marketable eggs or table-fowls. Nevertheless, it has its own club in this country; and whenever separate classification has been provided for it, together with the specially big pens required to allow the male birds to display their tail furnishing, those classes have been well supported.

Before passing on to the other sections of the Poultry Fancy, mention may be made of breeds which figure in the last class of all, the "any other variety." Of them the Rhode Island Red is one. And since a club was formed for it last year, boasting the title of the British Rhode

have been seen. With few exceptions, the different species were numerous exhibited last year. The Variety Bantam Club was not heard of to any great extent last season; but some varieties which were once fostered by that body now have clubs of their own—to wit, the Pekin, the Game (both Modern and Old English), the Hamburgh, the Indian Game, the Malay, the Plymouth Rock, the Rose-comb, the Scotch Grey, the Wyandotte, and the Yokohama. Both the Rose-comb and the Wyandotte Clubs came into being during the past season, and they have done excellent work in popularising these breeds of Bantams.

Of the Water-fowl and Turkey sections there is not a great deal to report. One generally saw good displays at the autumn and early winter shows, although it would be pleasing to find more novices in the duck Fancy. Orpingtons, the Buff variety more particularly, have boomed well; and since they are, in size, half-way between the Indian Runner and the Aylesbury, and are, moreover, reported to be great layers, they are certainly popular, and were taken up by several of the oldest duck fanciers in this country. Some good specimens of the Crested duck were exhibited last year, and in December I judged quite a good class at Diss, Norfolk. Geese have not advanced, Embden and Toulouse being by far the most popular breeds; and turkeys are where they have been for some few years. They were, however, shown to perfection, and I question if there is room for improvement in either kind.



A CELEBRATED BUFF ORPINGTON COCK

Belonging to Mr. W. Richardson. [Copyright.]

Island Red Club, and holding a club show in December, if I am not greatly mistaken, it has a future before it. Of other breeds there are Frizzles, Scotch Dumpies or Bakies, and Sultans, rarely met with at the shows, but cultivated by some fanciers to-day.

Then follow the Bantams. What a great fancy this is, to be sure! Never has it been in a healthier condition, and never in the whole history of the Poultry Fancy have the ranks of Bantam fanciers been larger than they were last season. Most of the breeds which I have previously mentioned have been "bantamised," and at the present time there exist the following: Ancona, Andalusian, Aseel, Brahma, Cochin (generally known as Pekins), Frizzled, Modern and Old English Game, Hamburghs, Indian Game, Leghorn, Malay, Minorca, Orpington, Plymouth Rock, Polish, Scotch Grey (or Cuckoo), Silkie, Spanish, Wyandotte, and Yokohama, in addition to Booted, Japanese, Rose-comb, and Sebright, which do not possess their large "relatives," and occasional specimens of Crève-Cœur, Dorking, and Houdan

THE ROSE-COMB BOOM.

By J. PETTIPHER.

FOR quite a number of years American poultry-keepers have recognised in various breeds both single- and rose-combs as distinct standard varieties. Until recently, however, no breed has obtained any amount of favour with both kinds of comb in this country. Take Orpingtons as an example. The originator brought out Blacks, Buffs, Whites, Jubilees, and Spangles as ten distinct varieties in consequence of each being produced in single- and rose-combs. The singles caught on, and in each variety the roses practically died out. Originally, in all probability, each variety was equally good and useful; but the British poultry-keeper took to one and discarded the other. On the other hand, breeds like the Wyandotte have always been accepted with a rose-comb, and singles discountenanced. Now, however, there appears likely to be a great change in this matter of combs.

Breeders of several varieties have seriously set themselves to work to produce birds and strains with rose-combs typical in every other respect of the single-combed specimens of the same breed or sub-variety of a breed. As particularly notable instances, I may mention the Black Leghorn, the Black Minorca, and the Barred Plymouth Rock. In all these varieties it has always previously been an English standard qualification that the

birds should have a single-comb; but rose-comb breeders have recently sprung up to such a considerable extent that already the rose-comb Black Leghorns have been produced to a sufficient state of perfection to satisfy the Council of the Poultry Club, and they have consequently been admitted to the official club standard. That the other two breeds named will shortly follow suit, and probably several others, is almost a matter of certainty.

The rose-comb boom is evidently growing rapidly, and we may expect to see more and more of this "rose-combing" of what have hitherto been single-combed breeds according to English notions and standards. The question that now arises is: Is this duplication of breeds that are exactly alike in all respects save comb desirable and calculated to advance the interest of poultry culture viewed either from a fancy or utility standpoint? I am of opinion that it is so in both cases. In the first place one may very well ask: Why have Americans for so long recognised as separate breeds exactly similar birds with single- and rose-combs? Would the cute American have done so if there had not been real and potent reasons for so doing?

Immunity from frostbite is one of the chief reasons given for the popularity of rose-combs in America; and though our winters are less severe, most of us who have bred the large single-combed breeds have experienced this trouble, even to the extent of having to dub and reduce to stock birds specimens hitherto also valuable for exhibition.

Another and more debatable point—but one which is strongly argued—is that as a rule a rose-combed bird is a more reliable and heavy layer than its single-combed *confrère*. Yet another point in favour of this rose-comb boom lies in the fact that every new introduction, provided it is of a really useful and attractive variety, is surely calculated to bring new recruits into the poultry industry. And the greater the number of people that can be induced to take up poultry-keeping the better—no matter how much they may be "fanciers" who go in for breeding for exhibition, they cannot breed all winners, and their efforts are bound to add to the production of English table-fowls and English new-laid eggs, and are consequently to be commended.

There can be no question that the "rose-combing" of such valuable utility breeds as the Leghorn, Minorca, and Plymouth Rock does do away with numerous troubles incidental to the large single-combs, thereby greatly assisting the breeder whose aim is the table or the egg-basket. At the present time I may safely say that in several breeds the rose-combs have already assured themselves of a strong foothold in the English poultry-yard.

The next question that arises, and the one that may very well be termed the question of the hour, is: Will there be unison between the breeders of single- and rose-combs of any given variety so that both may come under the same specialist club; or will the old single-comb breeders in a spirit of jealousy and opposition endeavour to ostracise the new-comers and drive them to form themselves into separate bodies? It is devoutly to be hoped that a spirit of

friendliness will prevail, and that in all such cases there will be unison—the only good that can possibly accrue from opposition will fall to the lot of the rose-combs, which being the more recently introduced will probably benefit from the opposition by being thereby introduced into greater notoriety. "To make a man popular make a martyr of him" is an old proverb, and may well be applied in the present instance. The continued multiplication of specialist clubs is not desirable. Far better one strong body than two weakly ones.

In a letter to a contemporary (*Feathered World*, January 21, 1910) the Rev. Hugh C. Wallace, the president of the Rose-comb Black Leghorn Club, very ably advocates the union of the Single- and Rose-comb Black Leghorn Clubs, and his arguments are equally to be applied to other breeds where circumstances are similar. He points out that the new-comers are true to type and genuine Leghorns, differing from the originals only in formation of comb; that they are already as largely bred and exhibited; that in many instances it is single-combed breeders that have also taken up rose-combs; and that consequently both varieties would be benefited by union. In many breeds, such, for instance, as the Black Orpingtons, although the rose-combs have never made much headway, they have always been acknowledged by breeders of the variety, and have occasionally won prizes competing with single-combs, and we might even go back half a century to the days of Lady Holmesdale, whose celebrated Rose-combed Dark Dorking carried all before him, and found a place in the illustrations of the early editions of Lewis Wright's standard poultry book.

Why should the rose-combing of more modern breeds be tabooed, and why should they not be deemed eligible to come under the head of the breed to which they belong? Why not single- and rose-combs of every breed, and each united under the same club and standard? The day of the rose-comb is at hand. Let breeders of both kinds of combs unite to their mutual benefit, for it is certain that in at least several breeds the rose-comb has come to stay.

NEDERLANDSCHE VEREENIGING AVICULTURA.

THE twenty-fifth anniversary of the Dutch Poultry Association which bears the above name was celebrated at The Hague on February 4, 5, and 6, when in the salon of the Zoological Gardens of that beautiful city was held the annual Exhibition. Upon the general features of that show it is not our purpose to dwell, more than to say that it was good in every way, great in numbers, and excellently arranged. The building in which the exhibits were displayed is roomy, well lighted, and airy. Among the jury, England was represented by Mr. A. C. Gilbert and Belgium by M. Paul Monsen, and Spratts Patent, of London, were responsible for the penning and feeding. There were no English exhibitors,

but British breeds were largely in evidence, and held the place of pride in the catalogue. Of these, Wyandottes, Leghorns, Minorcas, Plymouth Rocks, and Orpingtons were the most numerous, and there was a fair display of Bantams. Water-fowl and turkeys were also good. Dutch breeds were the most numerous, as might be expected, but as to these we shall say more on another occasion.

The Exhibition was opened on February 4 by the President, Herr W. J. M. de Bas, in the absence through illness of the Minister of Agriculture. The event was celebrated by a banquet at the Hôtel des Indes, at which the President was in the chair, supported by members of the Royal Court and the Ministry of Agriculture, and among the guests was Mr. Edward Brown, F.L.S., of London. The remarkable growth of egg-

English and other foreign races are met with, kept by amateurs and fanciers.

On the second day of the Exhibition an interesting function was held, at which the President, Herr de Bas, who has occupied that position since the founding of the Association on February 1, 1886, was the recipient of a well-merited testimonial, first, of a framed address bearing signatures of leading members, and of a valuable time-piece, and, second, of a charming floral tribute from the Zoological Society. Herr de Bas's services to the Association for a quarter of a century were spoken of in the highest terms, and his self-denying labours for its success, equally in connection with its annual exhibitions and its practical efforts in the promotion of industrial poultry-keeping, were eulogised. In his reply the President said that the honour was his in being allowed to



THE SALON OF THE HAGUE POULTRY SHOW.

[Copyright.]

production which has marked the last few years in Holland was emphasised specially from the fact that the country, instead of importing eggs as formerly, is now a considerable exporter. Up to the present time table-poultry have not received much attention, and in that respect the quality is distinctly below that of Belgian breeds. This may to some extent be owing to the humid climate and the moist soil, due to the flat land of which it is formed. There are many breeds of fowls in Holland, but these are chiefly kept as egg-producers. It is in the towns and manufacturing centres that

occupy that position, and he urged them to redoubled efforts for the future.

On the same occasion opportunity was taken to recognise the indefatigable work of the secretary, Herr S. Spanjaard, Jun., who has held that office for several years, and who by his organising ability and urbanity has contributed greatly to the Association's success. The President, in offering a beautiful oil-painting to Herr Spanjaard and a basket of flowers to Frau Spanjaard, expressed the respect in which they are both held, and the devotion of the secretary to the Association.

MEN AND MATTERS.

By W. W. BROOMHEAD.

A Novelty—Specialist Club Year-Books—Hatching Results—Miss Carey's Poultry—The Novice—The Royal Show.

A NOVELTY.

Poultry fanciers are ever on the look-out for novelty. One of the latest in this country is a breed which has flourished in France and other parts of the Continent for some years now—to such an extent, in fact, that it has its own standard of perfection—but which to most of those enthusiasts who visit poultry shows on this side of the Channel is quite new. I refer to La Bresse ; and since the breed is being taken up by some well-known fanciers, there is a likelihood of it enjoying a good boom during the coming season. That it is one which should be cultivated not only by the fancier, but by the strictly utility poultry-keeper, there cannot be the slightest doubt. I shall be greatly surprised, therefore, if it does not “go” well, and particularly with those who prefer fowls of the very active kind, its build being similar to that of the Leghorn in its early days. Writing to me recently concerning its laying powers, Mrs. Hollams, of Dene Park, Tonbridge, says: “We have done well with La Bresse on the Home Farm here. They need plenty of liberty, and then they rove all over the place, foraging in every nook and corner. They require a very nitrogenous food, since they are such active little egg-machines and mature wonderfully early. We have had pullets hatched in April laying in July.” As showing their great laying qualities, I may mention that some Black Bresse hens which had the run of a large apple and nut orchard last year, and were out in all weathers, laid an average of 179 eggs, although they were not fed up in any way to force them. The eggs, too, are of particularly good size and weight, and in this latter respect seven will easily turn the scale at a pound ; in fact, I have had some which weighed two pounds the dozen. As regards their exhibition points, there appears to be some difference of opinion in certain quarters as to which is the correct colour of the lobes. I understand from the hon. secretary of the English Club that it was unanimously decided at the general meeting, held at the last International Show, that La Bresse should be bred for red lobes. One reason for this decision was “that English breeders have always bred the white variety with red lobes” since La Bresse were introduced some eight or ten years ago ; and another, “that red lobes would make the breed much more distinct from the races of the Mediterranean.” Referring to M. Voitellier's standards of the French races of fowls, I see the colour of the white variety's lobes is white sanded with red or even blue, while that of the Black Bresse is “white as the snow.” Now, if it is absolutely necessary that each variety should have identically the same coloured lobes, white should be the colour, and not bright red. Mr. Wood, who first imported the White Bresse, bred out

the white lobes as far as he could ; hence it now happens that the English Whites have nearly all red lobes. Nevertheless it would be far easier to breed back to the white speckled lobes in the white variety than to breed out the white lobes from the black. It is impossible to get a pure-bred red-lobed Black Bresse ; and it is difficult to understand why the English Club should endeavour to take away from this beautiful and most useful breed of French Mediterraneans one of the chief characteristics which marks that race of fowls. I might say that on referring the matter to the Poultry Club Council at a recent meeting, in connection with the revised edition of its standards, it was decided that the lobes of La Bresse must be white.

SPECIALIST CLUB YEAR-BOOKS.

I was pleased to see the note on the above subject in last month's “Diary.” That an attractive year-book is an excellent means of popularising a breed is doubtless true enough ; and when it is properly carried out it need not be an item of expense to a club—rather the reverse, since some of those published by the more wealthy clubs have gone to swell the funds. But from what I have gathered concerning them this year, they do not appear to be going so well as they have done. It is only by the advertisements that they can be made to pay, and even the wealthiest club does not favour a loss on the publications. Already one or two have been greatly delayed for want of advertisements, and more than one urgent appeal has gone forth for support in that direction from members. Personally, I think that the greatest service would be rendered if all year-books were issued early in January, since there are few fanciers who have not then either promising stock or settings of eggs for disposal. At one time the biggest trade in eggs for incubation was done in the spring-time, but poultry fanciers are awakening to the fact that the winter demand is well worth catering for, since many summer shows now offer prizes for birds of the year, and to gain them the chickens must be early hatched.

HATCHING RESULTS.

Although the weather in most parts of the country has not been of the best for winter rearing, many chickens are already out and doing well. Among the first in the field with 1910 birds is the Hon. Mrs. Massy, of Ardfinnon House, Cahir, co. Tipperary. On January 1 she had broods off which aggregated 600, and at the end of the month her brooder house, which is of 1,800 capacity, was almost full, while some hundreds of eggs were in incubators, and hatching was taking place daily. Throughout the winter Mrs. Massy collected about 150 eggs daily from her fowls, and fertility worked out at 80 per cent. For winter egg-production the White Orpington has excelled all other breeds and varieties kept at the Cahir establishment, and as many as seven eggs a day from seven pullets were frequently collected in some pens. Mr. W. J. Golding, of Westwood Poultry Farm, Weald, Kent (the popular hon. secretary of the Buff Orpington Club), has also made a very good start with

his Blacks and Buffs, although his birds were not laying so well as they might have done, and many infertile eggs appeared among the early sittings. However, the "crop" so far is by no means bad, and the chickens are progressing in a most satisfactory manner. Among Wyandotte fanciers, Mr. Richard Watson reports "a good start with chickens," and Mr. W. E. Topham, of Burley-in-Wharfedale, had forty Whites doing well, despite the heavy snowfalls and blizzards that were experienced in the neighbourhood.

MISS CAREY'S POULTRY.

Among the many ladies who at the present time are giving their attention to poultry-keeping, there are probably few whose names have come more rapidly to the front in the Fancy, as a breeder as well as an exhibitor, than Miss Carey, of Toynton, near Spilsby, Lincs. It seems only three or four years since Miss Carey began exhibiting, yet in that comparatively short period fowls from her yards have won numerous prizes, among which are cups, challenge trophies, and medals. The Buff Orpington was the first variety kept at the Toynton establishment, and it is with that breed Miss Carey has secured most of her successes. But, in addition to it, she now keeps White and Black Orpingtons, Wyandottes of those two colours, and White Faverolles. As can be imagined, this last-named breed must be looked on as one of the very latest "manufactures"; but it is being reared solely on utility lines, hence Faverolles fanciers need not fear the introduction of another new variety yet awhile! The White is reported as being a very good fowl for laying as well as for table purposes, which is not surprising in a Faverolles, one of the best all-round breeds for utility that we possess. Miss Carey has entered whole-heartedly into the keeping of poultry as a business, and not merely as a passing fancy. And in addition to being successful in combining the two aspects, fancy and utility, she finds that gardening and bee-keeping are very useful adjuncts.

THE NOVICE.

From time to time various suggestions have been made so as to encourage the novice to enter his birds for competition with those of the professionals. Some were altogether out of the question, while a few appeared practical, or at any rate worthy of a trial. One of the latter, that of giving fourth or extra prizes instead of the ordinary special for the best bird in the class, was adopted by the Partridge Wyandotte Club last year; but after a thorough trial it has been abandoned, and that club has decided not to give any more fourth prizes, except at important shows. The, to my mind, unsatisfactory part of such a plan is that the extra prizes were confined to members of the club; and, so I am given to understand, these fourth prizes were often taken by birds gaining a "very highly commended" card—a somewhat peculiar, and certainly perplexing, proceeding. Had the Partridge Wyandotte Club been rather more generous with its specials of this nature, and offered

them for open competition, they would no doubt have had the desired result. It often takes "a sprat to catch a whale." The White Wyandotte Club evidently recognises this, since it awards its fourth prize specials to non-members as well as to members. The committee of the latter club is of opinion that such specials benefit the man who should be most encouraged, he whose bird in the ordinary course of events would just fail to get a prize. And the hon. secretary admits that "we occasionally gather a new member to the fold by appealing to him to join, when paying out the special"—a wise move, since a new fancier is never more keen on joining a club than when his bird has won a prize.

THE ROYAL SHOW.

I have just received a copy of the prize sheet issued by the Royal Agricultural Society of England for its seventy-first annual show, which is to be held at Liverpool from Tuesday, June 21, to Saturday, June 25, next. In the poultry section no fewer than 120 classes are scheduled; and not the least interesting are the ten that have been put on, for the first time, for Bantams, there being two each for Old English Game, Modern Game, Sebright, Brahma, and any other variety. I am somewhat surprised that separate classification has not been given for Pekins and Rose-combs, breeds which are generally very well supported. But now that the "Royal" has catered for the miniatures, I hope fanciers will show their appreciation in the best possible manner, and send in a bumping entry. Among the large breeds, those which get the largest classification are Wyandottes and Orpingtons, the former with twenty-four classes and the latter with twenty. Leghorns and Old English Game have eight classes each, and so have Plymouth Rocks, but in the latter case the classification is for Barred and any other colour only. It is not surprising to find that Croad Langshans and Black Sumatra Game have been expunged, although two classes for any other distinct variety of game are provided beyond those for Indian, Modern, and Old English, which may induce Sumatra fanciers to patronise them. It is a matter of surprise to many fanciers to find that the event this year will not be held under Poultry Club rules, and I understand that a strong protest on that account has been lodged at headquarters. It certainly is a pity, since the Poultry Club has a cup for competition solely at the Royal Show (known, in fact, as the Royal Cup), which, of course, cannot be offered for competition this year. I notice, too, that only three clubs—the Brahma, the Campine, and the Variety Orpington—are giving specials at the event. The prizes are 30s. first, 20s. second, and 10s. third, and the entry fees 2s. 6d. for members and 3s. 6d. for non-members. Readers of the RECORD who intend to have birds at the show should notice that entries close on Tuesday, May 31. The secretary is Mr. Thomas McRow, 16, Bedford-square, London, W.C. The judges are Messrs. George Faulkner, John Wilkinson, John Wharton, William Bygott, and the writer of these notes.



Spring Cleaning.

Cleaning of a sort is a necessary part of the poultry-man's daily task, but all such work is at the best more or less superficial in character and insufficient for the continued maintenance of thrift in the stock. With the anticipated approach of spring a more thorough and searching cleaning is required, because it is during this and next month that troubles due to parasitic infestation are particularly prone to occur. Days that are favourable to the successful completion of such work should therefore be taken advantage of, and the multiplication of attacking insects and mites, as far as possible, prevented. The use of lime-wash is very beneficial, and well and frequently lime-whitened interiors are pleasantly clean to look upon; but in many cases spraying with a paraffin emulsion is the most satisfactory method of extermination, especially where there are many wooden fittings. A spray pump with a Bordeaux nozzle should be used, and in order to reach the eggs of some pests repeated sprayings are necessary. It need scarcely be said that before each use of the spray-pump all the movables, such as nest-boxes and perches, should be taken out and treated separately; and that all litter and dust should be removed and burnt. It may also be remarked that if poultrymen would pay more attention to litter and nesting material, as well as the interior of nest-boxes, as a part of their ordinary routine, there would be much less likelihood of parasites getting such a permanent occupation of poultry quarters as they so frequently do.

Turkey-Breeding.

Particular attention has recently been drawn to the falling-off in the supplies of foreign turkeys, and the increased opportunities for home production, which, in the opinion of Mr. Edward Brown, should, and could, be increased ten-fold. The difficulties of successful turkey-breeding are really much less than has been so generally supposed, and have in the past been chiefly due to close breeding and a very common failure to understand the requirements of these birds. If in-breeding is avoided and only well-grown and sufficiently

matured stock is used; if the houses are roomy and openly ventilated; and if the feeding, extent and character of range, and general management are correct, there is no reason why any chicken-raiser should not also be a successful turkey-breeder and rearer. Turkeys attain maturity slowly, and probably the best average results are obtained from birds of from two to three years old, the poults being stronger and larger than the progeny of younger stock, and it is, from every point of view, a mistake to use yearlings for breeding. Quantity is not so important in egg-production as a vigorous hatchability, for which purpose the older hens are the most reliable; and from the statement that the stags must be well grown, it must not be inferred that unduly heavy birds are desirable—they are to be avoided. Although a single fecundation will fertilise a batch of eggs, the system of depending upon the service of a neighbour's stag is not to be commended, greater vigour in the offspring resulting from permanent mating. The practice of breeders varies relative to proportion in mating, but although six or eight hens may be run with a vigorous male, four or five will often prove sufficient for the purposes of the average farmer. The hens should be laying this month.

Feeding Grain to Chickens.

Although grains and seeds form an important part of the natural food of gallinaceous birds, they do not constitute the complete diet, a fact that it is very necessary to remember in arranging the rations of growing chickens. "Dry-feeding" has acquired some amount of discredit in proportion as it has been used too exclusively; nevertheless it is—within limits—a practical recognition of a natural principle. On either hand we have what are practically artificial methods, and an excessive use of either dry or moist foods is only justified in so far as one or the other may be found suitable for particular objects. From the point of view of production for market the mash bucket is most commonly desirable, but there are circumstances in which even the producer of spring chickens gladly avails himself of the scratching-floor. The quantity and quality of the market chickens

depends primarily, in so far as feeding is concerned, upon the use of soft food; but the exigencies of the season may necessitate some grain feeding, mainly to keep the birds employed under cover. The work of producing a suitable size and condition in from twelve to sixteen weeks is one of rapid and continuous growth and development, and consequently allows very little scope for the systematic use of "dry-feed" and the conditions of close confinement which the method necessarily involves. The scheme of feeding for such a purpose should preferably consist of a staple soft food diet of Sussex ground oats, sharps, &c., with wet weather access to a dry floor, whereon a mixture of small grains and seeds may be scattered in litter when necessary.

SOME FAVOURITE COOPS.

THERE is great variety in the coops employed for the accommodation of the hen and her brood, but so long as they are substantially made, free from draughts, and well ventilated, the exact form does not matter in the least. It is very important that they shall be stoutly built, since otherwise the constant moving from one place to another—and regular moving is very necessary to avoid fouling the ground—quickly causes

them to become loose in the joints, and consequently draughty. The most convenient size for a coop is two feet square, which gives the inmates ample space.



THE DOUBLE COOP. [Copyright.]

A very common, and a very excellent, form of coop is the "lean-to" (an illustration of which appears on this page). In this case the height in front should be about twenty-one inches, sloping down to about fifteen inches at the back. It is advantageous to have a fairly steep fall in the roof, since this ensures the rain draining away quickly. The roof, ends, and back are solid, while the front is made of bars a couple of inches apart, which allows the chickens to pass between, but which keeps the hen a prisoner within. A shutter can be arranged to partly cover the front, in order to provide protection during the night from cold or rain, and from the sun during the day.

For use early in the season a coop of this description provides insufficient protection if placed out in the open field; if there is a shed or barn in which it can be placed, it answers excellently. If there is no shed available, however, the single coop should be discarded in favour of the double, since the latter possesses several important advantages. The double form consists of an ordinary lean-to coop with a covered run attached, both beneath the same roof; and thus, however wet or windy the weather may be, the chickens are provided with a dry and comparatively warm exercising ground. It possesses the further advantage that the chickens can be fed quite apart from the hen, which is an important consideration, as they are usually supplied with comparatively expensive food. In a coop of this description the inner compartment has a solid roof, end, and front, while the division between the coop proper and the run is made of rods. A convenient size for a double coop is two feet wide by four feet six inches long, divided into two feet square for the inner compartment, and two feet by two feet six inches for the run.



THE LEAN-TO COOP. [Copyright.]

SOME FEEDING PROBLEMS.

III. THE CYCLE OF THE ELEMENTS.

(Continued from Page 254.)

WE have seen something of the way in which simple elements and compounds are built up in the cells of the plants, making complicated organic substances; we must now follow the various constituents as they pass into the animal body. The three main groups of compounds that concern us—namely, the albuminoids, fats, and carbohydrates—as they are present in the plant, are all insoluble, and the whole process of digestion is towards rendering these soluble, so that they may pass into the blood of the bird and thus fulfil their various purposes.

Unfortunately, so few experiments have been made with poultry, or, for that matter, with any birds, that it is impossible for us to discuss the question of digestion from known facts, and therefore we must suppose that the action of the various juices secreted by the digestive organs is similar to that in the case of animals. We can but indicate the direction in which future experience will show that we are wrong in our surmises. Readers themselves will doubtless realise where differences may occur in the process under which the food goes as it has mixed with it the different secretions.

The food taken up by the bird passes directly down the gullet to the crop. This organ is really an enlargement of the gullet, but the walls of it contain the glands that secrete the saliva. The saliva of birds contains the same active principle as that of mammals, and its action is similar. The active principle is a soluble ferment, a ferment that has the power of converting the insoluble starch (carbohydrates) into sugar, thus rendering it soluble. The length of time the food remains in the crop is comparatively short; hence only a small fraction of the starch is acted upon, but the action continues as the food passes still further through the digestive tract.

The bolus or rounded mass of food is forced into the stomach. This is a very small organ in the case of a bird, but at the same time the gastric juice is secreted from its walls, as in animals. In the first place, it is alkaline, but gradually becomes more and more acid. The constituents of the gastric juice are three in number. The first is a ferment that acts only on the food in the presence of dilute acid. This converts the insoluble albuminoids into soluble nitrogenous substances called peptones. The second has the power of curdling milk. The third, hydrochloric acid, has the effect of changing the cane sugar, formed by the action of the saliva on the starch, into another form of sugar called glucose or grape sugar.

Leaving the stomach, the bolus passes into the gizzard. This organ takes the place of the teeth in mammals, for by the movement of its thick muscular walls and its grit contents the bolus is ground up, thus giving the juices a better opportunity of coming into contact with the food constituents. Whether any other action takes place in this organ has yet to be determined.

Passing into the small intestine, the bolus is subjected to the action of three other secretions—the bile, pancreatic juice, and the intestinal secretions. The bile is a greenish fluid of alkaline reaction, secreted by the liver. Its main use is in the absorption of fats. In the small intestine some of the fat is broken up into glycerine and fatty acids; the latter unites with the alkalies of the bile and forms soaps. These soaps aid in forming and holding the remaining fat in permanent emulsion. It is to be noted that with the other secretions they are formed for the one purpose of acting on the food, but in the case of the bile it is a waste product or excretion. It prevents putrefaction and decomposition of the food in the intestinal canal. The pancreatic juice is secreted by the pancreas, or "sweetbreads," and is poured into the intestine at the same time and about the same point as the bile; hence they work together. This secretion contains four ferments, one of which breaks down the fats into glycerine and fatty acids; another converts starch into sugar; a third resolves proteids into soluble peptones; whilst a fourth curdles milk. Thus it will be seen that the pancreatic juice is able to perform the same work as each of the other secretions. The juices secreted by the small glands along the inner walls of the small intestine contain three ferments which act upon starch, protein, and fats, and, moreover, the juices also contain a special ferment that converts cane sugar into glucose, thus being similar to the action of the hydrochloric acid in the gastric juice.

It is probable that future experiments in bird nutrition will demonstrate the fact that practically no action takes place in the large intestine. We come to this conclusion by the fact that the food passes more rapidly through the digestive system of a bird than it does through that of the majority of mammals. In the latter case fermentation sets up, and it is believed that the cellulose, otherwise unacted upon, is in this way broken down, and the best authorities hold that the digestive portion possesses considerable nutritive value, although not so much as starch or sugar.

The various parts of the digestive tract form a convoluted tube passing through the body. Food within this tube is still outside the body. The products of digestion enter into the body by absorption, which is of two kinds. The inner walls of the digestive tract are lined with blood-vessels, and substances soluble in water and readily diffusible, such as sugar, soaps, salts, and peptones, enter the blood by diffusion. The inner surface of the small intestine is also lined with cone-like projections called "villi." The cells of these "villi" separate from the fluid contents of the intestines sugar, fat, peptones, &c., and deliver them into the ducts of the lymphatic system, by which they are carried forward towards the heart. The lymphatic system mentioned is one that drains the whole animal body toward the heart. Besides collecting the products of digestion from the small intestine, it also removes the broken-down tissue of the body. Thus lymph, the broken-down tissue, and chyle, the products of digestion, the one the worn-out

material from the body, the other fresh material from the digestive tract, are poured through this system into the venous system and on to the heart, where they mingle with the blood current.

The arteries, carrying the blood from the heart, pass throughout the body, branching again and again, gradually growing smaller, until they end in minute divisions called capillaries. The ends of these capillaries connect with the veins, which carry the blood back to the heart. The purified blood forced outward from the heart reaches the capillaries, through which portions escape to nourish the tissues of the body. That which is not lost through the capillaries, together with the impurities gathered on the way, returns to the heart, whence it is forced to the lungs for purification.

When the blood reaches the lungs it takes up oxygen from the inspired air, and the expired air carries with it carbonic acid gas and water eliminated by the blood. Considerable moisture also escapes with the expired air.

As the blood passes through the kidneys the nitrogenous waste of the body is taken up by that organ, to be discharged as urea. The loss of this waste by other means is so small that the nitrogenous waste of the body can be determined by measuring the quantity of urea excreted.

The proteid compounds, taken up by the blood, are converted into serum albumen, which is conveyed to the capillaries, bathing and nourishing the tissues. The whole body is made up primarily of cells of various forms, and these, nourished by the serum albumen, may divide again and again during growth, or, if no growth occurs, the serum albumen repairs the waste of body tissue incident to life and action.

As already pointed out, the fats of the food are largely absorbed unchanged, in the form of an emulsion, through the lymphatics. The fat is generally modified by the animal or bird consuming it, so that when built into fatty tissue that of each species has its own characteristics.

The starch, in the form of sugar, enters the blood by absorption from the intestinal canal. In the liver sugar is converted into glycogen and held in reserve, or it is rapidly oxidised into carbonic acid gas and water with the elimination of heat. An excess of carbohydrates may be converted into fat and stored in the body.

We have tried to follow as far as possible the changes which the elements undergo in the plant, and also when plant substances are taken into the body. The carbon, derived from the carbonic acid gas in the atmosphere, may either be liberated by the oxidation of the sugar in the body, in which case it is exhaled again as carbonic acid gas, or it may be stored up in the body as fat or tissue, not to be returned to elemental form until the bird dies or is eaten, when it may pass into the soil, and becomes decomposed, or it may pass through another body to be eventually liberated by oxidation or decomposition. The water in the food is partially excreted in the manure and partially given off by respiration. The broken-down or waste tissue of the body—the nitrogenous compounds—are discharged in

the excreta as urea, thus returning to the soil as plant food for further vegetation. Thus the cycle of the elements is maintained, the waste product of one form of life being the food of another form.

(To be continued.)

NUMBER OF FOWLS PER ACRE.

By H. DE COURCY.

BEFORE purchasing fowls, or, in fact, before making any choice with regard to the number or breed of fowls we can keep, we must first determine what is our available accommodation as regards houses and runs. The houses we can have erected to suit the size of the runs, but we cannot always increase the size of our runs to accommodate the number of fowls we wish to keep. Therefore our first consideration should be: What number of fowls can we keep on the area of land we can command? It has been stated on high authority that as many as 200 hens per acre can be kept in a healthy condition, but it is most probable that this cannot be done on the same acre of land year after year, for the land being overstocked would certainly become too rich, the necessary balance between vegetable and animal life would not be maintained, and the land would ultimately become tainted and impregnated with disease.

The number of hens that can actually be kept with profit year after year on an acre of land must necessarily depend to a great extent on the nature of the soil. When the soil is a wet or heavy clay the manure is retained on the surface, and so large a number of fowls cannot be kept on a given area as on the same area of a light or sandy soil, which absorbs the manure. On an acre of land 40 to 60 fowls would be a sufficient stock if they had to be kept on the same acre continually, but a farmer who has plenty of land at his disposal can pen about 150 hens in an acre for one year, but in order to avoid disease must move his runs to new ground the second or third year. With a one-acre poultry-farm the best course to take is to divide the plot into two equal parts, and keep all the poultry in one half for six months and move them to the other half for the next half-year. By adopting this course a greater number of fowls can be kept in a healthy condition than if they ran over the entire acre all the year round, and, besides, a luxuriant crop of grass, clover, or cabbage can be grown in the unstocked half every six months. At the same time, it must be remembered that overcrowding is not advisable, but this can be avoided by sub-dividing the acre into a number of plots to accommodate 20 or 30 hens each. A far larger number of eggs may be expected from hens kept in flocks of two dozen than from flocks of four dozen or more. This is so, because when hens are kept in large flocks, the stronger and more active ones secure almost all the tit-bits, natural and artificial, that are to be picked up, and besides, large flocks do not distribute themselves evenly over the available ground, but are apt to overcrowd some parts, leaving others unfrequented.

Were it not possible to keep poultry with a fair

amount of success in very limited runs, a great many would be debarred from keeping them who now do so with profit. This particularly applies to dwellers in towns and the suburbs of cities who keep poultry, and can always get a good price for the eggs they produce. In such circumstances it is of course necessary to have some system of keeping the yards clean and sweet, and with this object the best system that can be adopted is to gravel the yards, and allow them to become hard like a road. They can then be kept clean by sweeping regularly, and green food can be supplied in the form of refuse cabbage, lettuce, &c.

THE VALUE OF RYE AS A POULTRY FOOD.

To the Editor of the ILLUSTRATED POULTRY RECORD.

SIR,—On page 254 I am interested to see an article by Mr. Will Brown on "The Value of Rye as a Poultry Food," and now that Pumpnickel is so much before us, it pleases me to see that rye has at any rate some use.

In either 1899-1900 or the following winter I wrote to Mr. Randolph Meech about the use of rye for winter-laying stock, and his answer was to the effect that it was of no use to laying hens, and would probably do them material harm. Having, however, been educated in Germany (Dresden), where rye was largely used, and living at that time in one of the few rye-growing districts of England, I gave the grain a trial. I found that my hens fed on a half-and-half mixture of rye and wheat—owing to its high percentage of carbohydrates I did not give rye only—in that somewhat cold winter laid *far better* than other birds of mine, or of my neighbours, fed only on wheat or maize. I am happy, therefore, to be able to bear out Mr. Brown's remarks, at any rate as regards really severe weather.

It seems to me, at the price quoted on page 255—*e.g.*, 28s. per 480lb.—that rye should be a valuable addition to the dietary of laying hens in the winter time.—Yours, &c.,

C. E. J. WALKEY.

Staplegrave, Feb. 1st., 1910.

To the Editor of the ILLUSTRATED POULTRY RECORD.

SIR,—I was very much interested in reading Mr. Will Brown's remarks on the above subject in the February issue of the ILLUSTRATED POULTRY RECORD. I have lived for a considerable time in Germany and other European countries, and have noticed that many Continental poultry-keepers use rye for feeding their stock, but since returning to this country I have always been afraid of using this special food for my birds. My reason is this. Of all the various grain-bearing plants rye is most subject to the fungus growth called ergot, and the effect of feeding ergotised grain is very dangerous. The fungus attacks the ovary, bringing it into a diseased condition, the deep mycelium within the ovary becomes denser and harder, forming the so-called

sclerotium, and lies dormant until the grain is sown. Ergot acts upon the system in many ways, one of the most common being the rapid contraction of the uterus, causing abortion or premature birth. In some instances a disease known as ergotism is brought about, usually resulting from the continued use of rye as a food. This is a terrible form of poisoning, in which not only convulsions appear, but often also gangrene of the extremities. Many dreadful epidemics that have occurred in rye-eating districts are now supposed to have been caused by ergotism—for instance, the outbreak in Lorraine and Burgundy in 1816.

My object in writing to you is to point out the dangers of using rye for poultry feeding, for there can be little doubt but that the effect of ergotised rye will be the same in the case of fowls as that noticed on animals. Whether the effect would be principally confined to its action on the uterus, or whether the extremities, such as comb, wattles, and toes, would, after a time, become gangrenous, I cannot say, but either form would be serious.—Yours, &c. AMATEUR.

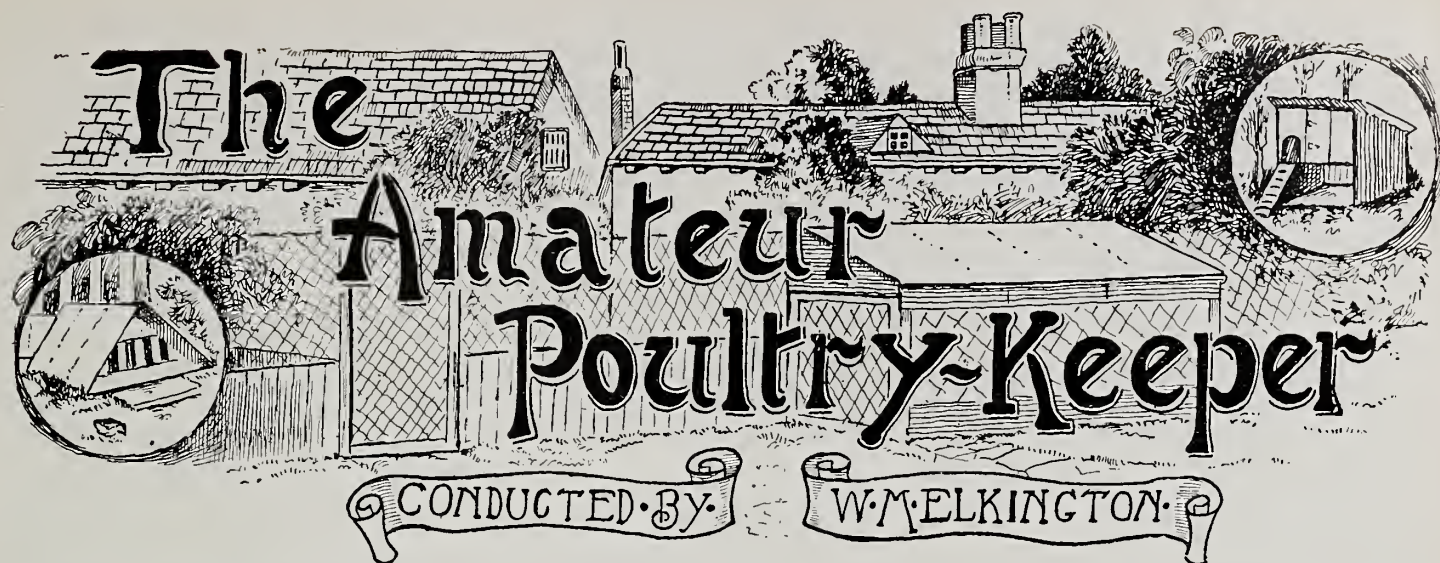
To the Editor of the ILLUSTRATED POULTRY RECORD.

SIR,—I believe that if Mr. Will Brown will make careful inquiry he will find that rye meal is used to a considerable extent by some millers to cheapen the cost of production of barley-meal. If this is so, it would certainly pay the poultry-keeper to buy rye-meal as such, and use it for feeding his birds.—Yours, &c.,

A FARM POULTRY-KEEPER.

SUSPENSION OF LIFE IN CHICKENS DURING INCUBATION.

M. BOUCHUT, of the Paris Academy of Science, states that if eggs that have been incubated for three days are taken away from the source of heat, the heart ceases to beat after a lapse of twenty-four hours, and, further, that if the heat is withheld for a period of three days, dipping the eggs into warm water will have the effect of restarting the action of the heart. Mr. V. Fortier, who, by the way, is assistant to Mr. Gilbert at the Government Experimental Station at Ottawa, writing in *L'Aviculture Moderne*, relates his own experiences in this direction. On one occasion during the month of May a nest of thirteen eggs was deserted by the hen for thirty hours, commencing on the sixth day. When placed under another bird the process of incubation proceeded, and on the twenty-second day ten strong, vigorous chickens were hatched. On the second occasion, on the eighth day of incubation, the lamp was out for thirty-six hours, after which time the machine was raised to the normal temperature. The result was that an average hatch of strong chickens was obtained, the only noticeable difference being that they were a day late.



Ducks for Amateurs.

There is money to be made out of ducklings by those who go about it in the right way. In some parts of the country, particularly in Buckinghamshire, many of the cottagers make a regular practice of rearing and fattening two or three broods every year, and there is no reason why this should not be done elsewhere, for ducklings sell readily in any small town, whilst there are no doubt many who would like to rear a few for their own table or for their friends. Many amateurs have, however, failed in the past through non-observance of one or two important rules which govern duck-raising for the table. They allow the young ducks to run about in the general poultry-yard and to feed with the fowls, and then they miss the best period for killing the birds and keep them on until they have eaten more food than they will ever pay for, whilst, finally, when they do kill them, they find the birds poor and fleshless. Let me briefly explain why this is. At about the age of eleven or twelve weeks, according to circumstances, ducklings commence to grow their heavy quill feathers, and if you handle a bird about this time you will find it studded all over with pin-feathers, like a porcupine. Naturally, the growth of those feathers entails a very severe strain upon the system, and though the bird may have been plump before, it will gradually lose flesh whilst the feathers are growing until the new plumage is complete.

Hints on Management.

Obviously, therefore, the birds must be killed before these pin-feathers make their appearance, not only to prevent wastage of flesh, but also to avoid a difficulty in plucking, and it will be apparent that if a duckling is to be got ready for killing by the age of nine or ten weeks some better plan must be adopted than letting it run and feed among the fowls. The brood must be confined in a small yard, with a well-littered sleeping-house and plenty of shelter. They must lead a quiet life, and not be allowed to dabble about in water, only sufficient water being allowed for drinking, particularly at feeding times, and they must be given as much food as they will eat from the time they leave their mother. Amateurs can

utilise scraps of all kinds for this purpose, and mix them up with pea-meal and barley-meal to form a soft mash to be given in troughs. Fresh boiled offal will also prove very useful, and a little green food should be allowed. Feed four times a day up to the age of seven weeks, and three times afterwards, and remove the troughs after each meal. Well-fatted ducklings of the Aylesbury class sell best during the spring and early summer up to the end of July, so eggs should be set at once. These may be freely bought at this season, for it would not pay the average amateur with limited space for keeping breeding stock. The eggs hatch in twenty-eight days, so that anyone setting eggs this week (the first week in March) should have ducklings ready by the second week in June, by which time the early peas should be ready to accompany them.

Stock Ducks.

There is another branch of duck-keeping which, though not so suitable for small spaces, may appeal to some of my readers who have convenient accommodation. Duck-keeping for egg-production may be made profitable with some of the smaller breeds, such as Buff Orpingtons, Indian Runners, and Campbells, and one may still produce a few ducklings that will be appreciated upon one's own table, though one must not expect success in the market branch with these breeds, nor yet is it any use keeping the large table-breeds like Aylesburys and Pekins for egg-production pure and simple. The smaller laying breeds, however, do best where they have a good range, and though it does not necessarily follow that they cannot be kept in confinement, I do not think they will give such good results as hens, whereas with a paddock of two or three acres and a good pool of water one may keep a flock of Buff Orpingtons, Indian Runners, or Campbells economically and profitably. All they need is a roomy, well-ventilated sleeping-house with plenty of dry, clean litter on the floor, a yard in which they may be fed in the morning and confined until they have laid, which they generally do by eight or nine o'clock, and two feeds a day, consisting of soft food in the morning and grain in the evening. For those

who have ornamental grounds and desire to keep water-fowl more for pleasure than for profit, I would recommend some of the beautiful little ornamental species, and particularly the magnificent Mandarins, the Carolinas, and the dainty Bahamas. These are all hardy, and will breed in this country among favourable surroundings.

Inactive Hens.

With the advent of warmer, and, it is to be hoped, drier weather, everyone should be getting plenty of eggs; though I am afraid many amateurs will still find a difficulty in getting some of their hens to adopt business-like methods. We all know the hen that goes straight to a corner after she has had her breakfast and stays there till the next meal comes along, and if we are wise we do not allow such a hen to occupy valuable space in our yards any longer than we can help, for she is assuredly a source of loss rather than of profit. But at the same time we must consider whether her idle habits have been promoted by our own bad management. If you give food to hens without providing any incentive to scratch, you must not be surprised if they spend their days standing in a corner, for as they are not reasoning beings, they have no means of knowing that exercise is healthful and therefore worthy of being indulged in for its own sake. You can make the best hen living inactive if you feed her in such a way as to satisfy her appetite without demanding any effort on her part; and that is why, even in the smallest run, fowls should be made to scratch for their food. You cannot very well bury scraps and soft food, but all grain should be thrown down among loose litter, and if the birds do not take to work willingly, keep them short till they do. The art of feeding poultry in confinement is to give sufficient food to produce satisfactory results, and to compel the hens to keep themselves in fit condition in the finding of it.

A TOWN POULTRY-KEEPER'S EXPERIENCES.

CONFESSION, we are told, is good for the soul. Let me say at once that my confession is made in the hope that it may be of service to others, that they may profit by my mistakes. For there is no greater truism than that we learn by our failures, and assuredly that applies to the amateur poultry-keeper more than to anyone else. In the first blush of the hobby we scorn

good advice. As to young people, it seems that all that is necessary to start a home is a man and wife, so to the amateur poultry-keeper does it seem that all that is required to procure eggs is a few fowls. It is self-evident that this is a very rash view. Nevertheless I have found fowls kept in all manner of unsuitable places, from a rabbit-hutch in a bedroom to a corner of a cellar. When one finds fowls kept in a cellar one cannot help slyly wondering whether the owner is trying to procure a set of new coloured eggs; but that by the way. I won't insult the intelligence of my readers by enlarging on the unsuitability of both places.

But it is undeniable that the difficulties which confront the would-be poultry-keeper in a large town are no



A TOWN POULTRY-KEEPER'S YARD.

[Copyright.]

light ones, and it is for that reason that I think a brief account of my trials will be acceptable. It is so often urged that poultry cannot be made to pay unless they are kept in the country. I cannot agree with the contention. Observe common-sense rules, profit by the experience of others, and fowls in a town garden more than pay their way, besides providing a delightful hobby.

To come to my own experience. Like most others, I took up poultry-keeping to save money and to derive pleasure. Eggs had always seemed dear in town, and the supply obtainable very seldom ministered to the weakness I freely admit I have for the rich dark variety. But if I wanted rich dark eggs, what easier than to get a farmer, at a little extra cost, to allow me to have the pick of his basket, place them under a hen, and hatch out

chicks which would eventually supply me with the class of eggs I desired? The idea was too good to miss. To cut the story short, I hatched five out of twelve eggs. Two of the chicks turned out to be cockerels, and there was not a pure-breed in the quintette. I was not discouraged, however, and when at length a brown egg came there was great rejoicing in the camp.

Following the advice of a friend, I had just before bought a couple of Buff Orpingtons and two Buff Plymouth Rocks. They cost me 10s. a pair, and let me at once say that it was a very wise speculation. They gave splendid returns, and helped considerably to pay back the expense I had been put to; whilst my mongrels, although laying splendid eggs, could not be considered as wholly satisfactory from a profit-making point of view.

I have never been able to give my fowls very much exercise. Grass fields have been an unknown luxury, but I have, as often as possible, given them some loose grass. They have had a covered run, plenty of scratching exercise, a breakfast of pollard mixed, as often as possible, with water in which the household meat had been boiled; a midday meal of mixed corn given at the rate of a handful to each fowl, a good supply of clean water, and a box of grit nailed up to the side of the run. I have not used trap-nests. For nests I get an orange box of three compartments (price 3d.). This provides three nests. A little clean straw and a pot egg is all the encouragement I give, and all, so far as my experience goes to show, that is necessary.

The net result of my observations during a year was this: The town poultry-keeper should aim above everything else at getting winter eggs. Here he has an advantage over his country competitor from the fact that the town yard is more sheltered, and the scraps from the house (which are very effective as egg-producers at this season) can be doled out with a more lavish hand to each hen, as they are fewer in number. It is in winter, when eggs are six for a shilling, that one realises the profit of wise poultry-keeping; it is in summer that one derives the pleasure. Combine the two, take the one with the other, and keep an eye to profit, and you will find it difficult to meet with a more lucrative or satisfactory hobby.

THE AMATEUR'S GUIDE FOR MARCH.

THE peculiar character of the weather this season has upset calculations both with regard to egg-production and rearing chickens. It has been proved that wet weather is the most formidable enemy poultry-keepers have to contend with, and whilst breeding stock have been seriously hindered in their domestic duties, those who are generally in the habit of rearing early chickens out in the open have found it practically impossible this year without some kind of shelter overhead and boards beneath. The consequence is that I fear many of my readers will find themselves later than they intended with their hatching and rearing operations; but after

what we have gone through they will not lose very much, because the early chickens have not grown at all well and a good many have been lost. By the time this appears the weather should have improved distinctly, and unless February fill-dyke lives up to its reputation to the very last the ground should be drier, which will give chickens a better chance to thrive. March is generally considered the best month of the year to hatch chickens, and I would advise those of my readers who want to raise pullets for laying next winter to hatch as many as they can this month. There are some heavy-boned, slow-growing strains of the larger breeds, especially exhibition strains, that need to be hatched earlier, but as regards utility fowls, and layers in particular, it may be accepted that March is *the* month of the year for hatching.

Whether or not chicken-rearers will now be able to dispense with protection altogether depends entirely upon the weather, but we have no doubt there will no longer be any necessity to keep coops under cover, though wooden floors will still be essential. When these are used, however, there must be an ample supply of peat moss-litter, which is the best material for coops and rearers when broken up fine.

The lengthening days also give the chickens a better chance, but those who wish to push their birds along will still do well to give a feed of corn by lamplight about ten o'clock at night. This is more particularly desirable with birds up to the age of four weeks, for after that time they are able to store away enough in their crops to last them through the night.

Chicken-rearers must take the precaution to move the coops from time to time, and as the earlier chickens develop they should be drafted on to fresh ground. This, however, is the great difficulty in the case of amateurs who have very limited space, and they will be well advised to curtail their operations, for it is better to rear a few birds and do them well than to crowd a large number into a small space and have the mortification of losing many and seeing the remainder grow slowly.

This is the best time of year for selling the lower-priced eggs for hatching and day-old chickens, and those who have anything to sell should lose no time in advertising their wares. A few words about packing eggs will be useful. I have tried all kinds of boxes, but the cheapest and the best is a good strong chocolate box that can be obtained from a grocer or confectioner for a mere trifle. My plan is to wrap each egg in two or three pieces of paper, and then pack them in the box with hay and more paper so that the contents are wedged firmly. This entails some little trouble, but it ensures safety, and it is cheap. For more expensive eggs I use strong leather-board boxes with partitions, and pack these inside strong wooden boxes, with plenty of paper wedged all round. The leather-board boxes by themselves will not withstand the delicate handling of the modern railway porter, but when packed in a wooden box security is assured, and when one has a lot of eggs to send away this is a quicker plan than that described above.



The Russian Poultry Industry.

That the development of poultry-keeping in Russia is growing enormously, our columns have testified from time to time. The American Consul-General reports to his Government that from a small beginning poultry-farming is rapidly gaining importance commercially, and looks like equalling the butter industry of Siberia. The business is becoming increasingly profitable, the quality of the exports having improved, as well as the methods of distribution.

Poultry Pioneers of America.

Mr. H. H. Stoddard, writing in the *American Poultry World*, which admirable new monthly deserves every praise, deals with the early advocates of poultry-breeding in America, and accompanies his article with excellent portraits of the Rev. S. R. Bram, D.D., Mr. Chas. A. Sweet, Mr. J. K. Felch, and Mr. Philander Williams. The three last-named are termed "the three main pillars of standard-bred poultry culture in America."

Paris Show.

In consequence of the terrible floods which devastated Paris in January and February, the annual exhibition of poultry had to be postponed for a month. We hear that the loss to poultry-keepers has been enormous, and must seriously affect this season's breeding operations. We sympathise deeply with all who have suffered by this calamity.

Orpingtons in France.

The Orpington is gradually winning its way in France, as in several other Continental countries, specially as a winter layer and for the production of spring chickens. It appears to possess the recommendation of great adaptability to new conditions.

Retirements.

Mr. George C. Bates has retired from the editorship of the *American Poultry Journal*, which position he has held for about a dozen years; and Mr. Miller Purvis is said to be giving up control of the *American Poultry*, which he founded and has edited for some years.

A Dutch Poultry Conference.

In connection with the Twenty-fifth Anniversary of the Dutch Poultry Association (*Nederlandsche Vereeniging Avicultura*), a National Congress is announced to be held at The Hague in June next, at which the entire subject will be discussed after papers are read by leading experts. The Congress will have four sections.

Belgian Table-Poultry Exports.

In confirmation of the statements made in the marketing section last November as to Germany's influence upon the egg and poultry trade, it may be mentioned that enormous quantities of the famous Coucou de Malines fowls are exported to Germany, where they are sold at high prices enhanced by the import tax of 25 centimes (2½d.) per kilo. For this trade only the largest birds are required.

Laying Records.

Recently a statement was given out that a certain Plymouth Rock pullet laid 48 eggs in succession without missing a day. She produced 174 eggs between February 1 and October 1, and is still laying. She had a companion which laid 181 eggs in the same time, and still keeps it up. This is at the rate of three eggs every four days. In the same pen are nine other hens that, in the last eight months, have put in the egg-basket 1,499 eggs, or an average of more than 136 eggs each. The total cost of their feed, with the prevailing high prices, was 8.81 dols., or approximately 10 cents a month for each fowl. The eggs brought 26.56 dols., leaving a net profit over the cost of feed of 17.75 dols., or 1.61 dols. a hen for eight months. The same breeder has a pen of 19 White Leghorns, and while the individual record was not as high, the average was higher, being 152 eggs each. The value of the eggs was 34.45 dols., and the cost of feeding was 14.75 dols., or a little more than 9 cents a fowl per month. The total profit over food was 37.45 dols., or 1.78 dols. a hen.

Eggs Preserved in Liquid Prohibited.

The suit brought by the Hypolite Egg Company of St. Louis against U.S. Secretary of Agriculture Wilson has been withdrawn. This is the case in which the complainants not only claimed that Secretary Wilson had no authority to prohibit the sale of liquid-preserved eggs in inter-State commerce, but in extreme terms declared the pure food law unconstitutional in that it relegated police powers to a Federal Department.

Judge After Egg Trust.

Judge Locham, of Kansas City, is of the opinion that poultry products in the States of Missouri, Kansas, and Oklahoma are in the control of a trust, basing his belief on the high prices demanded for eggs and the

COCK-CROWING MATCHES.

THE sport of cock-crowing is very popular in the frontier districts of Belgium and Germany, more especially among the miners of that region, who are keen poultry-breeders for that purpose. Our photograph was taken at a famous place for these contests, behind the Café Royal in the Rue Montague Sainte Walbruge, on the elevated plateau about Liege. Here every week during the winter season contests are held, usually at half-past ten and half-past two on Sundays. The fowls bred for this purpose are called "bassets," and are small in body, like ordinary Bantams, perhaps a little larger than the exhibition type. They are decidedly gamy in appearance, and many closely resemble Black-red Game



JUDGES AT THE COCK-CROWING MATCH.

[Copyright.]

limited number coming forward. He has requested the grand jury to make an investigation, and a number of dealers connected with the egg market will be asked to tell what they know about market manipulation, and the public will have an opportunity to learn whether or not the hens of that territory have failed in their duty.

The German Goose Trade.

The goose retains its hold in Germany, where the turkey has not attained the supreme position. Supplies are drawn from all parts of Eastern and South-Eastern Europe, brought by train loads. In spite of bad trade and reduced means of purchasing, it is estimated that nearly 400,000 geese reached Berlin in the few days prior to Christmas.

Bantams. As a rule each breeder only keeps about ten birds, which are provided for by small houses in the back-gardens of the miners' houses. The great point is the training of the cockerels, as upon that will depend the success attained, though chance enters largely into it. Before testing or matches the cocks are kept in the dark, then placed in cages and shown their favourite hens, which leads them to give expression to their feelings by crowing. Sometimes a bird has been known to crow two hundred and fifty times in half an hour. For the purpose of matches, however, there are many interesting provisions so as to give variety to the sport. In some cases prizes are given for the bird which crows sixty, seventy, eighty, or one hundred times in half an hour or nearest thereto. Any crows above or below mean loss

of marks. A cock-crowing contest is an interesting scene. The birds are placed in the cages shown in our illustration, and the owners with scorers sit on the bench in front. Each crow is recorded carefully, not by the owner, however, and at the end these are totalled and the prizes awarded, the chief winner usually receiving a floral tribute as well. Usually the entry fee is 1s., and five birds form a class, the prize amounting to 4s. (5 francs). In some cases there are general sweepstakes. It is stated that the wives encourage this sport, as it keeps the men at home.

THE VORACIOUS CROW.

IN some districts the crow is a veritable plague, causing considerable loss of chickens and ducklings. We quote, therefore, some observations from the 1908 "Report of the Rhode Island Agricultural Experiment Station," by Dr. L. J. Cole, entitled "The Crow as a Menace to Poultry-Raising":

The crow's depredations upon poultry consist almost entirely in the destruction of eggs and the killing of the young. Adult fowls are probably seldom attacked unless sick and weakened. The eggs of the turkey, which is commonly allowed to roam and select its nesting-site far removed from the house or poultry-yard, are especially liable to destruction by crows. They do frequently, however, attack chicks, young turkeys, and even goslings. . . . It is reported that crows sometimes attack even such large animals as sheep and swine.

Serious depredations of crows upon poultry and eggs appear to occur only in certain localities, while in other places, though the crow may have an unsavoury reputation, as he generally does in farming communities, he is at least free of this opprobrium. The reasons for this are probably two-fold, depending, first, upon the abundance of other food, and, in the second place, upon the accessibility of poultry. As poultry-raising is now generally conducted, when any special attention is given to it, the eggs are no longer exposed to the danger from crows, since the hens lay in regularly appointed houses. Furthermore, the young chicks are, as a rule, much better protected, being confined in yards and runs near the house instead of being allowed to roam at large with their mothers. Nevertheless, as will be illustrated below, the crows may become very daring in their attacks when other food is scarce. The necessity of an abundant supply of food is especially great during the months of April and May, when the crows are rearing their young. Certain experiments on feeding young crows in captivity, which are reported by Forbush, indicate that the young crows require a large proportion of animal food, and that, when fledged, they "absolutely require a daily amount of food equal to about one-half their own weight; and it is evident that they will consume much more than this to their own advantage if they can get it." Since young chicks are usually raised at about the same time it is evident why they often furnish a very acceptable addition to the crow's larder.

Judging from the fact that comparatively few complaints have been received, it would appear that the poultry-raisers of this State have not been greatly troubled by the crow. During the past season, however, two cases have been reported from different sections of the State, in which the depredations by the crows have been so persistent as to cause serious losses. The first of these was reported by Dr. V. L. Leighton, who has an extensive poultry plant not more than half a mile from the Experiment Station in Kingston. Dr.

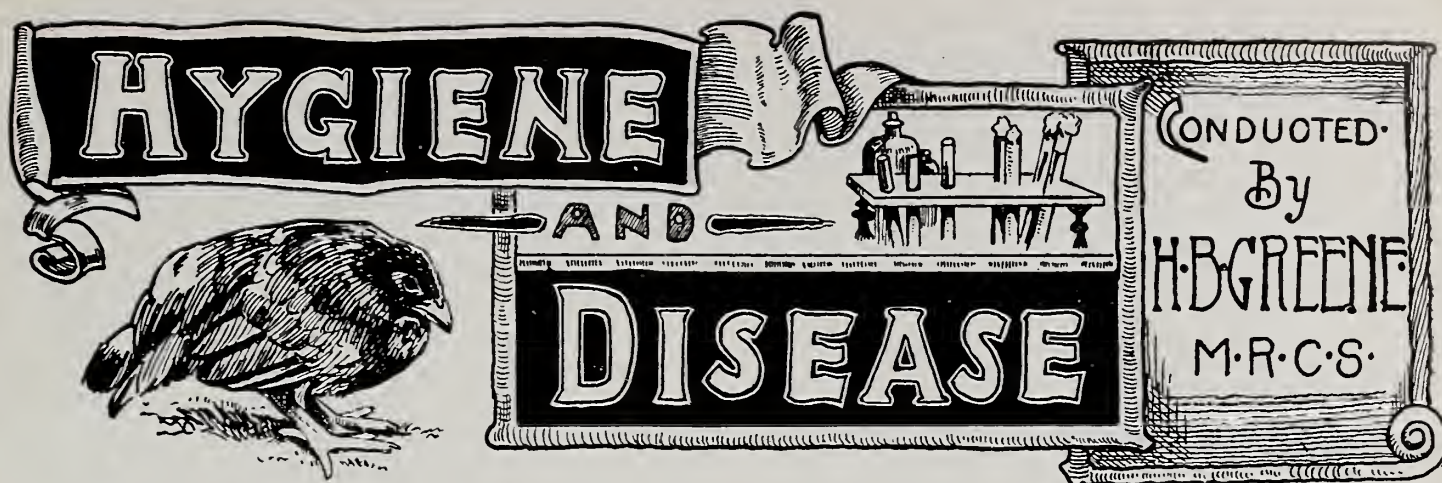
Leighton's plant is not a great way from a large piece of woodland in which crows are abundant. His experience this year was as follows:

He was troubled most seriously from about April 1 to July 10. This is just the season during which the crows are raising their young and the young are learning to forage for themselves. Dr. Leighton estimates that during this period he lost, from the depredations of the crows alone, in the neighbourhood of one hundred chickens, which was about 25 per cent. of those hatched and not lost from other causes. All sizes were taken, from the time they were just hatched until they were a pound in weight. The large chicks the crows killed and ate where they caught them, but the smaller ones they carried away in their beaks. Various efforts were made to keep the crows away, most of which were ineffectual. The first was a scarecrow, but this had little or no effect. In the second place corn soaked in strychnine solution was scattered on a field of planted corn at a little distance from the chicken-yard. This may have killed some crows, but no dead ones were found. No corn was pulled, but there was no appreciable decrease in the number of chickens taken. Third, a steel trap was set on a pole near the chicken-yard, but without success. Fourth, white twine was run on stakes around and across the chicken-yard; this kept the crows from the yard, but the small chicks would get out, and would then still fall a prey to the crows. Finally, a crow was shot and hung on a pole near the chicken-yard, after which there was no further trouble. It is Dr. Leighton's opinion that stealing chickens is a common habit of crows in this State. He has been troubled before, but never so seriously.

We should be glad to publish facts with regard to the depredations of crows in this country.



OUR RUSSIAN CORRESPONDENT'S POULTRY-HOUSE.
[Copyright.]



POST-MORTEM EXAMINATIONS.

We have made arrangements by which post-mortem examinations of poultry and game can be effected for our readers upon the following conditions :

1. *The specimen is to be forwarded postage or carriage paid and securely packed to "Biologist," 297, Trinity-road, Wandsworth Common, London, S.W.*
2. *The fee of 2s. 6d. (stamps will not be accepted) must be remitted with each specimen and a letter giving particulars of feeding and housing, or any symptoms which were observed before death.*
3. *Birds should on no account be addressed to the office of the paper. If forwarded there they will be returned to the sender.*

It is recommended that specimens be dispatched by parcels post, where practicable, and as soon after death as possible. A reply will be received by letter, defining the disease, its cause, treatment, and prevention.

A Strange Poultry Disease.

News came to hand last month of a mysterious epidemic disease among the poultry on a Swedish farm. The particulars of the outbreak, which are of a most interesting character, were courteously supplied to me by Mr. F. Bagge, Commissioner to the Swedish Board of Agriculture. The farm was upon a good-sized estate, and included cattle, horses, and poultry. Of the latter 202 were kept, of which all were fowls, there being no ducks, geese, or turkeys on the farm. A number of labourers were employed on the estate, and these lived in cottages situated in some cases at a considerable distance from the farm buildings. These labourers between them kept 385 fowls at their own homes, the breeds kept being Plymouth Rocks, Leghorns, and cross-breds.

Details of the Epidemic.

The first case started on December 24, and on the same day six or seven hens died at the farm. In the course of the next few days about 30 died, after which the epidemic seemed to lose its intensity of infection, for as weeks went by the cases became fewer and the fatal issue was deferred in point of time. Of the 202 fowls at the farm, 129 died. The Plymouth Rocks were the chief sufferers ; after them came the Leghorns, while

very few of the cross-breds were attacked. Of the 385 fowls kept at the houses of the labourers only 49 died, and the contrast in their results as compared with those of the farm fowls is probably accounted for by the fact that the labourers' birds were scattered about in small colonies, and therefore more isolated from the risk of a general infection.

The Nature of the Attack.

At the commencement of the epidemic, when the infection was at the height of its virulence, the course of the disease was remarkably short, lasting from a quarter of an hour to two hours only, and ending fatally. As it abated in strength, the duration of the disease lasted in the later cases as long as two days, before death took place. The symptoms, as far as we could obtain them, are meagre in detail. The birds were observed to mope by themselves in a semi-comatose condition, with the heads drawn in and the crops puffed out.

Probable Cause of the Outbreak.

Bacteriological examination revealed the presence of micrococci in the blood, occurring in chains (*streptococci*) and pairs (*diplococci*), and it is very probable that this poultry disease was an intense form of blood poisoning dependent on the presence of the above micro-organisms. The question is : Whence were they derived and how did they enter the poultry ? On this point the information from Sweden is not very clear. If I might venture an explanation, it is that the micro-organism is one which was described in England in 1906, and found to be present in horse-dung, on which account it was named *Streptococcus equinus*. The horse manure in the Swedish farmyard might have been the original source of infection, and its conveyance on the boots of the labourers to the poultry-pens at their own homes would account for the scattered and less virulent outbreaks in their yards.

A Curious Find.

As illustrating the extraordinary substances that find their way to a fowl's crop and gizzard, I had the opportunity of testifying to the following experience : A very fine cockerel was submitted to me for post-mortem

examination, forwarded from a mining district in the North of England. With the bird was received a note stating that several hens had also died unaccountably. The crop of the cockerel when opened was found to contain fourteen pieces of coal, varying in size from half an inch to a square inch, but of very uniform shape. The gizzard was full of pulverised coal and little else, while the intestines contained a quantity. The aggregate bulk of the fourteen pieces of coal in the crop would, when placed together, have formed a mass so large as to make one wonder how a crop could be stretched to such an extent without injury to its walls.

Pneumo-Mycosis (Mould Fungus).

The evil effects of feeding poultry upon mouldy and mildewed grain are not limited to the suppression of their growth and productive capacity that attends a poor diet. There is a form of inflammation of the lungs caused through their invasion by mould fungi, to which all domesticated birds are liable if so fed, or when supplied with scratching material derived from such diseased grain. The name pneumo-mycosis has been given to this disease in order to distinguish it from other pneumonias. Three or four different types of fungus may be its exciting cause. Their names I need not trouble my readers with now. It is more important to know that the disease often appears in a number of fowls at once, probably because they derive it from the same mouldy sample of grain, or inhale it from the chaff of the scratching-floor. The symptoms of rapid and loud rattling breathing, an appearance of impending suffocation, blueness of comb, diarrhoea, and exhaustion resemble those of any pneumonia of whatever origin, and the distinction can only be made on post-mortem examination. It is therefore always advisable to have a dead bird examined at the earliest opportunity, and while awaiting the report change the corn and bedding material.

CHICKEN CRAMP.

By H. B. GREENE, M.R.C.S.

WITH the hatching season in full swing both broodies and brooders are now at a premium, while the chicks they shelter, or at least so many of them as will attain to maturity, are at present the most important department of the poultry-yard. For they embody no small share of the invested capital of the industry, and on their number, their growth, and fitness for whatever market ultimately claims them depends to a great extent the annual profit of poultry-keeping. Trade Returns and statistics tell us approximately at the close of each year the amount of profit derived from this great army of chickendom, but who is able to recount the losses by the way? How, for instance, can we more than dimly conjecture the immense number of chicks that die in the first week or two of their existence, of ailments which might easily have been prevented or controlled?

When chickens are hatched by fifties or hundreds, a

few fatalities in the first fortnight after their removal to the brooder are apt to excite little concern until the few become the many. Then a dilatory inquiry into the details of their management, aided, perhaps, by a post-mortem examination, reveals the fact that the mortality might well have been stayed from the outset. The experience so gained, however profitably it may serve on some similar future emergency, brings little immediate comfort to the disconsolate owner as he numbers the dead. It is reasonable to expect that the value of a chick will in due time attain to the value of a laying pullet or a table-cockerel; but if that estimate be excluded as being too optimistic, it must be granted that chick values are at least equal to those of the eggs from which they were hatched, plus the labour and expense of hatching and rearing. Even upon so low an appraisal, the amount of money dropped in the industry through preventable mortality among young stock must be very considerable every year.

There are many preventable diseases connected with the brooder stage of chicken-rearing, but it would be impossible in the space allotted to a single article to treat of all or even the greater number of them. I shall therefore only attempt to describe a group of ailments as distinct from each other in the manner of their causation as they are in the character of their symptoms, to which collectively has by usage come to be assigned the common title of cramp.

The name is unfortunate and apt to be misleading, especially when treatment comes to be considered. For although cramp, or leg weakness, as it is sometimes called, is *the* prominent symptom in each of the ailments of the group, its recognition as such does not carry us further towards distinguishing which of several diseases calls for treatment. Without this knowledge, and it can only be arrived at after a full consideration of other signs taken in conjunction with the most noticeable one, all treatment directed against the malady will necessarily be only in the nature of guesswork, and but rarely happy in its effects.

The term "Chicken Cramp" is, however, so universally used throughout the poultry world that no advantage would be gained by substituting another for it, provided only that it is always remembered as representing a group and not a single disease. Forgetfulness, or want of knowledge of this fact, is responsible as each chicken season comes round for the number of complaints of intractable and fatal cramp, especially among brooder-reared chicks.

For convenience of description, and in order to emphasise more strongly the necessity of distinguishing between the different forms of cramp, I have classified them under five headings, as follows—viz.:

- (1) Muscle cramp.
- (2) Thermal cramp.
- (3) Rheumatic cramp.
- (4) Gouty cramp.
- (5) Rickety cramp.

Such a classification will be found easy to keep in mind. There is no form of leg cramp met with in fowls

from the time of hatching onwards which cannot be included in one or other of these five divisions, and it has the further advantage of suggesting the cause and to some extent the mode of prevention of each variety.

(1) **MUSCLE CRAMP.**—All cramp is, of course, a form of painful muscular spasm, but I have limited to this class all cramp that depends for its origin upon some mechanically applied constriction or impediment to the muscles of locomotion. The earliest age at which this simple muscle spasm is observed is in the case of the newly-hatched chick immediately it has left the shell.

Lameness, disinclination to walk, and a tendency to squat on the floor are the signs met with. The cause is from a constrained position or sprain of the leg while within the shell. As long as the injury is merely muscular, and there has been no displacement of the bones, a few hours' rest, separation from the others, and gentle rubbing of the leg with any form of oil will effect a cure.

Another and a much more serious modification of muscle cramp is observed in brooder-reared chicks when the floor-covering is insufficiently soft and presents a hard, unyielding surface to the feet. Nothing wrong will be noticed for the first few days after the chicks have been transferred to the brooder. Then a number of them, and especially those that have been previously most active in running about, will become inclined to squat. If stirred from this position they easily raise themselves to the standing position, but immediately they try to walk they stumble, and the shanks seem to give way under them. If a chick is examined at this stage the muscles on the *front* part of the thighs and shanks will be found to be much wasted and thinner than those at the back.

The deformity progresses, the impact of the hard floor tends to flatten the claws and cramp the anterior leg muscles still more, the balance of muscular power becomes uneven, until at last the unaffected muscles assert their predominance and the claws become twisted laterally and flexed. The bird sinks back on its hocks, from which position nothing will tempt it except, perhaps, the sight of the food-trough, for the appetite in this variety of cramp never fails, and the general condition of the bird remains healthy. As to treatment, the indication is, of course, at once to provide a soft floor-covering of dry, fine earth or chaff laid down to the depth of 4in. or 5in., and if the material selected is earth, it must be frequently loosened with a rake to prevent caking. When this is done soon enough, the chicks quickly recover with no other treatment except daily rubbing of the wasted muscles, but if deformity has advanced to the stage of flexion of the claws, malformation is likely to be permanent.

(2) **THERMAL CRAMP.**—This variety of cramp, like that just described, is frequently met with among chicks reared in brooders, but is by no means limited to them, for it often occurs in chickens of more mature age if they have been housed in too warm quarters or raised in a greenhouse. I have distinguished it by the name "thermal" cramp, since we can trace its cause to

improper heat, especially when the heat comes from the floor and is thus applied to the feet of the birds. The ailment takes much the same course as regards lameness and deformity as muscle cramp from a hard floor, except that swelling and heat of the thighs is more evident than wasting of muscle. It is often also the result of neglecting to gradually reduce the temperature of the foster-mother week by week, or of keeping chickens too long in the brooder. The remedy for thermal cramp is to at once do away with the particular cause, keeping the floor of the sleeping-chamber cool, reducing the temperature of the brooder if that has been the fault, and if the chickens are old enough, hardening them off and getting them into more open quarters as quickly as possible. In addition to the swollen legs, this cramp may be further distinguished by the fact that the victims are very thirsty, and while eager to drink quantities of water will eat very little.

(3) **RHEUMATIC CRAMP.**—As its name implies, this cramp arises from rheumatism contracted by exposure to rain or running in wet grass. It is therefore more common among older chickens or those that are cooped on grass. Brooder chicks escape on account of their more protected surroundings. The signs are limping and stiffness of the legs, with or without some swelling of joints, and often accompanied by stiffness of the neck and retraction of the head. The treatment consists of placing the bird in a warm flannel-lined basket by the fire, rubbing the affected part with some stimulating liniment, such as sweet oil and turpentine, and internally administering from three to six grains of citrate of potash with one grain of camphor two or three times a day. Chickens with rheumatic cramp generally eat well, are not abnormally thirsty, and as long as they are kept at rest do not appear to suffer much.

(To be continued.)

REVIEW.

THE A B C OF POULTRY. A Reference Work for Amateur, Fancier, and Professional. By E. B. Johnstone. Sir Isaac Pitman and Sons. 1s. net.

THIS volume is the cheap edition of a work that was issued in 1906, having for its special feature the division and classification of subjects into paragraphs, each dealing solely with the subject under treatment. The re-issue would have been more useful if some attempt had been made to bring certain matter up to date. Thus, the table of prize-winning pens in the Utility Poultry Club Laying Competitions is still only brought up to 1905. The other information contained in the dozen lines devoted to the Utility Poultry Club is by now inadequate and in at least one detail erroneous. Some of the writing strikes one at this date as a little naïve, not to say vague. To say of shell-less eggs that "insufficient shell-making material is not infrequently a cause, as might be expected," is to be obvious rather than illuminating. The book contains some few of the eternal truths, and that is about the best that can be said of its practical usefulness.

THE POULTRY-KEEPER'S OTHER INTERESTS.

By "HOME COUNTIES."

*Author of "The Townsman's Farm," "Poultry Farming: Some Facts and Some Conclusions,"
"The Case for the Goat," "Country Cottages," &c."*

"Poultry should be only one part of the stock."

—*The Secretary of the N.P.O.S. in the "Cyclopedia of Modern Agriculture."*

THE POULTRY-KEEPER'S MILK SUPPLY.

The other day, meeting Mr. Edward Brown, a motto from whose sane poultry writing is flown over these Notes every month, I embraced him enthusiastically. Not that the Northumbrian had disappeared completely in the Continental since Mr. Brown's visit to Belgium. Not at all. My enthusiasm had been excited by the adhesion of the honorary secretary of the N.P.O.S. to one of my favourite fads. At the end of my goat book and in my uncollected works *passim* I have drawn attention to the value of the milk sheep, and Mr.

are not so mad on doing it as the regular "poor man's cow," and their disposition is altogether less adventurous; and in many places it is much easier to get a sheep than a goat. Certainly, a goat in a poultry-run seldom answers. I have seen one, when no other way of getting into mischief presented itself, trying to get up a fight with the cockerel. A sheep likes rubbing itself against things, and is a lumbering animal, but goats seem doomed to make trouble inside wire netting. In Friesland I saw milk sheep with very large udders; and most peasants have one of the animals. A special



BELGIAN MILK SHEEP.

[By courtesy of the N.P.O.S.]

Brown, fresh from Belgium, had spoken in commendation of the animal; and in this extremely serviceable volume of his which has just been issued, "The Poultry Industry in Belgium," giving the practical results of his latest poultry tour, there is an illuminating half-page explaining how poultry-keepers might advantageously get milk from the creature which, in modern times, though not in Saxon, has been kept in this country for mutton and wool only.

GOATS V. SHEEP.

My argument for milk sheep was that they are manageable kinds of beasts and they haven't horns, nor are they as keen on standing on their hind legs as goats. No doubt sheep will bark trees at times, but they

breed is believed in for milk-producing, but I should think that most sheep would yield a profitable amount of milk. Undoubtedly, the milking qualities could be strengthened by breeding.

MILK YIELDS.

Mr. Brown's evidence from Belgium that a good sheep will yield as much milk as a goat confirms the information I had. Sheep also thrive on ground overrun by poultry. Mr. Brown gives the yield of a good ewe as from seven to eight and three-quarter pints. Eight pints is certainly a substantial amount, but a smaller yield would pay. A poultry-keeper would, of course, keep two or three sheep. They would not only give milk, but be very serviceable in eating off the grass,

which badly wants doing in most poultry-runs. One point Mr. Brown does not touch on is important, and this is the manurial value of the sheep. I have heard a farmer say that the sheep leaves a penny on the ground every night; and there is, of course, the day penny as well. A great advantage of the sheep as a manure distributor is that the deposit has not to be spread by hand, as in the case of the cow, if rank patches in the grass are to be avoided.

REPAIRING THE HEDGE.

I wrote in January of hedge-planting. I ought to add that anyone who thinks of planting a hedge should write to the Board of Agriculture at Whitehall-place, S.W.—no need to stamp the letter of application—for a copy of its leaflet, as it gives all details. I suppose the chief things in hedge-planting are sturdy plants and firm planting, and then keeping the bank clear of weeds and cutting down the quick two years after planting, when the roots are established, so that there may be a good bushy growth above ground. Very few planters of hedges have the pluck to be ruthless enough in cutting them down, and dogs and lambs, and then sheep, creep through, and the hedge is no longer a hedge. And when hedges are grown, how very badly they are kept in many parts! In my district the general notion of cutting a hedge is simply to mow it down with a hook. You hardly ever see a hedge properly laid—that is, the stems half cut off and laid horizontally, or rather at an obtuse angle. The usual idea of mending a hedge is to thrust what is shorn off into vacant spaces, with the result, of course, that the gap grows bigger still. In truth, in order to be efficient, the humble edge wants as careful and skilful treatment in its way as rasps or apples.

THE WASTEFUL SMALL HOLDER.

The question of manure on the small holding is well worth writing about. The small holder cannot have too much manure. Yet it is remarkable how thrifless he is in many cases in wasting what is within his reach. Not long ago I was at a small holding colony, and every one of the small holders ran his closets and slops into a septic tank. Indeed, now that I come to think of it, I have been on two small-holding colonies where a similar practice was in vogue. Now, water-closets are not only out of place in the country, but they are out of date. The right system and the best system outdoors and indoors is the earth-closet system. One of these days the country will wake up to the folly of which it has been guilty in not returning to the land the products of what it has been made to give. The wealth of China depends not so much on her natural fertility as on the scrupulous care with which every waste product is returned to the ground. In some parts peasants will follow caravans for miles in order to add to their store of manure, and many farmers build public rest-houses on the roadway for the accommodation of wayfarers for no other reason than to obtain what their land so much needs.

BACTERIA AT WORK IN THE POULTRY-HOUSE.

For a small holder to spend money on artificials when a more intelligent disposal of available material would

supply him gratis with a fertiliser of equal, if not greater, value than he could hope to buy seems particularly foolish. In my scratching-sheds the poultry-droppings are covered in the same way with soil. After a few months a most useful combination is dug out and distributed round the fruit-trees. Across in the United States the bill for artificials has reached an 'incredible figure, and it is mounting up tremendously in this country. But the small holder ought to be wise, and make the utmost use of every fertilising material within his reach. The prejudice against the earth-closet is due to the filthy caricature of it which makes the end of labourers' gardens a horror. However large a house I was building in the country, I should never introduce the wasteful tank system. If the indoor earth-closet is on the ground floor, it can be attended to from the outside. If it is on the second floor, it could still be attended to from the outside by making the pail stand on a movable platform which the attendant could lower.

THE COMPOST HEAP.

Another direction in which some poultry-keepers who cultivate a piece of land neglect to conserve all the manurial elements at their disposal is in taking too little care of the refuse heap. A properly-made compost heap is a grand thing for the land, and the man who is intent on having a good one can always find things to go in it. And if soil be frequently added these things will bulk up. There is a great deal to be said for burning certain classes of waste. Prunings ought always to be burnt, so that pests which so frequently lodge in the tips may be got rid of—that is to say, unless there is a goat which is allowed to devour the prunings promptly. But, after all, the produce of burning is potash, and that is not such a much-needed element as nitrogen. Nitrogen is, of course, the dearest manurial element that has to be bought for the land, and every opportunity ought to be taken of getting it cheap.

PHEASANT-REARING AS AN ADJUNCT TO POULTRY-FARMING.

By GODWIN EDWARDS.

THERE are over twenty Game farms affiliated to the Game Guild, the combined yearly output totalling over 90,000 birds and 1,400,000 eggs, thus showing the large demand for eggs and birds required to replenish the coverts at the end of each shooting season. There would therefore appear to be a good opening for poultry-farmers to add the rearing of Game birds to their general work.

The varieties generally used for restocking the preserves are the Common and the Chinese or Ring-necked—latterly the Prince of Wales and the Mongolian have been introduced, with a gain in general stamina. The fancy varieties suitable for aviaries are the Golden and Silver—Lady Amherst Reeves, Scemmerring's, and

the Elliots. There are several others, but these are the principal ones.

When considering whether pheasants could be added to the stock on a poultry-farm, it would be well to look at the characteristics of pheasants and the domesticated fowl. Both species are doubtless derived from the original Jungle Fowl. They are similar in their internal structure and in their habits. Practically the same food will do for either—grain, seeds, fruits, berries, green herbs, insects, and worms being equally the natural food of both. Their digestive organs are of similar structure and the assimilation of food is identical. The food when swallowed passes into the crop, thence to the digestive stomach, a short tube, about $1\frac{1}{2}$ in. long, connecting the crop with the gizzard—this organ, though small, is of extreme importance, as it is there that the

The young poults require to be treated much the same as turkey chicks, and the stock pheasants are fed much the same as poultry.

There are two ways of starting pheasant-keeping; the one by buying eggs and hatching either in an incubator or under hens, the other by purchasing a pen of half a dozen or so and breeding from them. The first eggs of the season are the most expensive, 10s. and 12s. per dozen being usually paid for those laid in April; in June and July they can be bought for 3s. The eggs are very fertile, and early in the season hatch out 80 to 90 per cent. Adult birds cost half a guinea each. A pheasant run can be either square or long and narrow—in the latter case it is easier to cover over. The pheasants like a long run to promenade up and down. There should be shrubs in the run, and artificial shelter may easily



MONGOLIAN PHEASANTS.

[By courtesy of the Editor of the *Field*.

gastric fluid, so necessary for the digestion of the food, is secreted in numerous small glands. The food, after being ground to a pulp in the gizzard, passes on into the intestines, where it is mixed with the bile from the liver and becomes absorbed into the system. It will at once be seen that the two species are very similar, and yet their natural instincts are different. Pheasants cannot be domesticated like the farmyard fowl, but there are individual cases in which pheasants reared by hand become perfectly tame, and will follow people about the house and garden like an ordinary pet. But their natural instinct is to be free, and therefore they have to be confined in aviaries, otherwise they would fly off to the woods and coverts. The breeding and rearing of pheasants is not so difficult as most people think.

be provided by means of bundles of faggots or furze; they do not need a sleeping-house when they have this. A dust-bath should be placed so that it is always dry, and a good supply of grit should be provided, both these being essential for the health of the birds.

In 1908 a friend of mine had some half-bred Mongolian pheasants' eggs given him. These he set in an incubator on June 20, and hatched out 17 birds, which he put into a home-made foster-mother. Four only died naturally in the rearing. He treated them in the same way as ordinary fowls. He gave two cocks and four hens to a lady at the end of the year, and she made two pens last spring. The first eggs were laid April 23. She collected 120, which were set under hens. The eggs were very fertile and the chicks were strong and healthy.

NOTES FROM CORRESPONDENTS.

NOTES FROM WALES.

By A. T. JOHNSON.

SO far the progress made in hatching arrangements must be considered more satisfactory than usual. There have been some sharp spells of winter, and those most trying of all conditions to stock of every age—a variable temperature, accompanied by rain, sleet, snow, frost, and fair weather—have prevailed in many districts for some time.

Notwithstanding such set-backs, both fanciers and utilitarians have some really good flocks of chickens, but the successful ones are of course those who have learned in the mill of experience the necessity for efficient shelter.

The mild autumns of the Principality, more especially, in the Western counties, which mean, as a general rule that we get quite nice weather up to Christmas, continue to tempt the poultry-keeper to set eggs at that season. The result is that there are, and will be for some time, a number of these spurious (I use the word in no disparaging sense) "spring chickens" on the market now. They are fairly large birds, but of only moderate quality because they are usually the wrong sort, and have been fed anyhow. Whether it pays to hatch and rear them is questionable, for mortality is high during winter, the period of growth prolonged, and feeding expensive. But the rural Taffy does not seem to worry very much over such details so long as the chickens are there and the 3s. 6d. to 5s. per couple forthcoming at this season. On the other hand, there is much to be said in favour of hatching late to supply the present demand, and that it can be made to pay my own experience proves.

Ducklings are, at the time of writing, like snakes in Iceland, and the prospects for a supply to feed the Easter demand are discouraging. I have frequently urged the claims of the utility duck as a profitable fowl in Wales but with the Taffy, except in a few districts, it does not seem to "catch on." He is content to see the slabs of his poulterers' shops adorned with frozen Russian or other aliens, and it is St. John's Market, Liverpool, that the retailer must depend upon for supplies. Even the farmers and others who do keep ducks fail to get them to lay early enough, and until they have learned the value of meat for egg-production and fertility in ducks I fear they will remain very much where they are.

Every succeeding year the demand for reliable eggs in the Principality continues to grow beyond the supply, notwithstanding the fact that the latter has increased so enormously of late. This winter has been no exception, and prices for good quality eggs are still remunerative. It may be conjectured that the election was instrumental in creating a demand for this class of political diet, but I am assured that the eggs used in the campaign were drawn from the supplies which had been "put by" last summer for the delectation of next Whitsuntide's trippers.

Preparations for the summer shows are well in advance

but, so far, no notable changes have taken place in the old order of arrangements. The Vale of Conway and District Fanciers' Association, of which Colonel Sandbach is chairman, has become the "Welsh Northern Counties Fur and Feather Association," the object obviously being to cover a wider field and remove the limitation which the original title involved.

Before these notes are printed the big venture at Abergavenny, upon which all fanciers' thoughts have been centred for some time, will be over. That the executive are exceedingly bold in attempting a classification of over 140 classes for poultry alone, in most of which the old-fashioned pairs of birds will be shown instead of singles, at this season is evident. But Major Herbert, the secretary, is well backed up, he is a thorough sportsman and good worker, and I can only hope that this, his first undertaking, will prove to be an unqualified success. The result will certainly be interesting from many points of view.

IRISH NOTES.

By MISS MURPHY.

MISS E. A. HARRIS has been appointed Poultry Instructor to the Galway County Committee of Agriculture, and Miss K. Murphy, Kantuck, has gone in a similar capacity to County Mayo. Both ladies received their training at the Munster Institute, Cork, where they took certificates in dairy as well as poultry work. Miss Murphy will be remembered as the runner-up for the championship at the recent London Dairy Show. She took first in the open class, and was only a point or two behind the champion prize, which was a very good performance for her first time competing. Miss Harris was a successful competitor at the 1909 Belfast Show, where, in addition to several prizes for butter-making, she carried off first prize in the trussing competition.

Miss O'Sullivan is having record attendances at her classes in South Tipperary, her average for her present class being forty. The advantage to the district must be very great, and one day, perhaps, the county will rank, as Miss O'Sullivan's predecessor wished it to rank, with the South-Eastern counties as a poultry-producing centre. Miss T. J. Hogan has resigned her post in Westmeath to take charge of the dairy and poultry branches at the School of Rural Domestic Economy, Dundrum, County Tipperary.

A very good story, quite a rival to that about the lady who set the Game eggs under a Dorking and expected first-cross chickens, was told to me a few days ago by an instructor from the West. A poultry-keeper wished to become a station-holder under the Department, and bought several dozens of eggs in order to rear the necessary thirty pullets. When the instructor arrived to inspect the birds she found everything satisfactory, and asked where the male birds had been purchased. She

was told they were reared from eggs, and on further inquiry discovered that the eggs had all been purchased from the same source, but one dozen had been sent to a neighbouring farm to be hatched and reared so as to have them unrelated !

As I write, the weather shows some signs of improvement, but the winter has been the most severe we have experienced for fifteen years. The scarcity of eggs has been very great, and spring chickens are likely to make record prices. Eggs are, however, hatching well, even in the incubators, but rearing in the open will be very difficult work unless there is a great improvement in weather conditions.

AMERICAN NOTES.

(FROM OUR OWN CORRESPONDENT.)

A MOVEMENT to compel the meat trust and other combinations that have been forcing up the price of food products to "come down" was begun in Cleveland, Ohio, two weeks ago (January 15). The promoters of the agitation apparently set about the matter in a business-like way, for the agitation has spread to all the large cities of the Continent, including Toronto and Montreal in Canada, and to-day (January 29) thousands of people have sworn not to touch meat for a period of sixty days. The strength and determination of the movement has badly frightened the packers and butchers, and meat has dropped from 3 cents to 8 cents per pound. There is a wide diversity of opinion as to the cause of the high prices of food products—the general public blame the beef trust ; the packers blame the farmers ; Archbishop Ireland blames the housewives who have forgotten the art of cookery ; and Secretary Wilson, of the United States Agricultural Department, blames the cold storage which enables the packers to hold the meat for indefinite periods, and thus manipulate the market. The New York State Legislature agrees with Secretary Wilson, and is taking steps effectually to stop this manipulation by forbidding meat or eggs to be sold that have been beyond a certain time in cold storage. This will prevent the holding of these products indefinitely for a favourable market. Secretary Wilson has been urged to remove the duty off eggs in order to allow the Canadian surplus to come into this country ; but he points out that that would not secure the desired result because the average price of eggs in the past winter has been 60 cents in American cities, as against 35 cents in the Canadian cities. A duty of 3 cents per dozen would not greatly affect the price either way. The movement to lower prices is being watched with great interest, and thousands of people have sworn off eating meat, fish, and eggs until the prices come down. Already the different products are feeling the effect, and some slight reductions have been noted.

The big shows at Madison Square, Boston, Chicago, and Guelph, as well as the hundreds of smaller ones all over this Continent, have been unusually successful this season. The records of the American Poultry Association, made up from the show entries throughout the

United States for an entire year, indicate the relative popularity of the different breeds. Of all the breeds of poultry shown, the Plymouth Rock family has the largest entry, Wyandottes second, Leghorns third, Rhode Island Reds fourth, and Orpingtons fifth. The most popular varieties in the Plymouth Rocks are the Barred and White. In addition to their popularity in the show-room, Plymouth Rocks have proved their worth as market-poultry from the fact that almost one-half of all that come to market alive are of this breed. The Rhode Island Reds are supported by the largest membership of any poultry club in America.

Secretary J. A. Vye, of the Agricultural Experiment Station of the University of Minnesota, is organising a Co-operative Egg-Selling Association among the farmers of Minnesota. The purpose of this Association is to produce more eggs, gather them at least once a day and keep them and market them in perfect condition. An effort is to be made to get the farmers to bring the eggs to market at least once a week, packing them in suitable boxes containing a dozen each, the whites and browns to be separated and the eggs to be of uniform size. Mr. Vye says that it has been found that by putting eggs up in this manner, and guaranteeing them as strictly fresh, a farmer can obtain at least 25 per cent. more for them. This organisation is to be modelled on the Danish Associations.

Professor H. C. Pierce, who has been in charge of the poultry department of the Iowa State College for the past year or more, and has handled the work there with thorough satisfaction, has resigned, and will be placed in charge of a corps of ten men, who will be engaged in the investigation of the chemical changes in poultry in transportation from the place of killing to market. The Government has recently taken a very active and a very proper interest in this matter, and it is hoped that much value will result from the forthcoming investigations. The investigation in connection with the marketing of poultry will be done under the direction of the food research laboratory in charge of Dr. Pennington. Some very valuable work along this line has already been done, consisting of chemical and other examinations of poultry in different stages of killing, storing, and marketing, with a view to determining the changes undergone, the aim being eventually to recommend a method whereby the present loss, due to improper handling, insufficient pre-cooling, and other factors, may be lessened. Mr. Pierce is to have charge of the field-work in this connection, and will therefore visit a large number of packing-houses and select specimens to be stored and examined. He will also make a close examination of the conditions under which poultry is killed, cooled, and stored. It is encouraging to see the Government taking hold of this important work. There is now a very considerable loss to the poultry-packers throughout the country because of improper methods of handling the product, and the Government should be able to introduce more uniform and practical ways of doing the work, and methods that will eliminate a large percentage of the present loss.

TURKEY FAIRS FOR THE CHRISTMAS TRADE IN CANADA.

(FROM OUR CORRESPONDENT.)

THE turkey being a native of Ontario, the custom of having one of these excellent birds for the Christmas dinner was established by the earliest settlers. Turkey-breeding was early instituted in the country, and has been continued in varying proportions to the present time. The annual production of these birds for some years approximated 1,000,000 head, but during recent years they have become somewhat scarcer. Last year not more than 600,000 were produced. Consequently the prices paid during December ranged from 18 cents to 23 cents a pound wholesale for birds prepared for market. The retail prices were 26 cents to 28 cents.

In order to stimulate turkey growing, a series of turkey

there will be a large increase in the production. Ontario is gaining a reputation for the excellence of its turkeys, and in view of the high prices it is probable that the size and number of the turkey fairs will in the future be far greater than they were this year.

REPORT ON THE POULTRY INDUSTRY IN BELGIUM.

REPORT ON THE POULTRY INDUSTRY IN BELGIUM. By Edward Brown, F.L.S., Hon. Sec. of the N.P.O.S. London: National Poultry Organisation Society. 112 pp., illustrated. 1s. net, post free 1s. 3d.

MANY and varied are the methods adopted in the production of eggs and poultry. In some countries the industry is very ancient, in others it is



THE TURKEY FAIR AT BROCKVILLE, ONTARIO, CANADA.

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fairs have been held this year throughout the country. Prizes were given for the best loads, the largest birds, &c. At one fair, at Spencerville, Ontario, more than 15,000 dols. was paid for the exhibit. The buyers from Winnipeg, Montreal, Toronto, and United States cities have visited these fairs, and have secured tons of dressed turkeys for their Christmas markets.

Should next season be favourable to turkey raising

essentially modern. We cannot know too much of what is being done elsewhere, the lines upon which the work is carried out, and more especially those newer developments which have advanced the poultry industry in almost every civilised country. Whilst it is undoubtedly true that we have much to teach other nations as to this pursuit, it is equally correct that there are many things we could learn with advantage

The public spirit, therefore, of the National Poultry Organisation Society in sending its honorary secretary upon missions of observation to other lands is to be warmly commended. The report just published, dealing with Belgium, is the third of this valuable series. The first was in 1906, when Mr. Brown visited America, and the second a year later, when Denmark and Sweden were dealt with. Both these reports awakened a great amount of interest at home and abroad, and have had considerable influence. That now before us will, we believe, yield equal results. It is full of most valuable information, dealing with a country where poultry-keeping has been carried out on advanced lines for many centuries, and where very important developments have taken place within recent years, more especially in the rearing of table-poultry and ducklings. Probably in no European country does poultry occupy a greater place in rural products than Belgium. Whilst the author states that he has been familiar with that country for many years, to complete his observations he has recently spent several weeks visiting the leading poultry districts, and as a result this report is up to date and most complete. It is illustrated with a series of plates, and, issued in this cheap form, should command a wide circulation.

It is impossible in a short notice to attempt anything like a complete summary of its contents. The chapters deal with Poultry-Breeding in Belgium, Housing and General Management, Egg-Production, Market Poultry, the Duck Industry, Geese and Turkeys, Marketing the Produce, Belgian Races of Poultry, Instruction in Poultry-Keeping, General Notes and Summary, and the numbered paragraphs make reference simple in the extreme. In view of the increase of small holdings in Britain, and the importance of securing increased fertility of the soil, the story told in Chapter I. is of the deepest interest. This relates to 'the Campine, which, at one time an arid, sandy plain, has been used largely for poultry-breeding, with the result that the soil has been so improved that large areas are being turned into market gardens. The manurial value of poultry is not sufficiently recognised, and we commend this record to all concerned. The chapters dealing with Egg-Production, Market Poultry, and Duck-Breeding are of great value. In all these directions great progress has been made. The growth of rearing and fattening the famous *Poulets de Bruxelles* has been very great, and is fully dealt with, inclusive of the interesting experiment of the Vicomte de Beughem at Lippeloo, described in the January POULTRY RECORD. The whole work is replete with information, and the conclusions and recommendations deserve careful study and consideration. Certainly there is no European country which offers a better example of what can be accomplished upon small occupations with industry and thrift than Belgium, and attentive consideration of what has been done there should stimulate many of those who are now turning their attention to the land. This report is well arranged, has a very complete index, and should find a place on the desk of every poultry-keeper.

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CHAIN GARDENS, HINWICK POULTRY-FARM.

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THE HINWICK POULTRY-FARM.

A FEW miles from Irchester, and a little farther from the Northamptonshire town of Wellingborough, lie a little group of villages, of which the names of two alone concern us—*viz.*, Podington and Hinwick. They concern us because, in a manner of speaking, the Hinwick Poultry-Farm is situated in both of them. It may be said to begin in Podington and end at Hinwick. Adjoining the former hamlet is to be found the main part of it, the part that includes the dwelling-house, the outbuildings, and the scratching-sheds; while a little way down the road are some five acres of orchard and a vast parallelogram of meadow land, enclosed on every side by protecting spinneys, which is known as Chain Gardens. At Hinwick itself is an acre of grass, protected in the same fashion, and used as a rearing-ground. The farm has grown steadily since its foundation in 1891, and having been developed on lines dictated by great practical experience, is undoubtedly the most important poultry-farm in this part of the country at the present time.

The character of the business done by its energetic proprietors may be gleaned from the catalogue, and one need say no more here than that the aim is not "fancy" exclusively, nor yet utility, but the happy combination of both. It is a utility farm in so far that the utility qualities of the breeds kept are sought for and obtained side by side with their show points,

assuming the latter to mean, as they do in this case, purity of type. It is not a utility farm in that it does not supply eggs for the table, or any table-fowls beyond those which by reason of their failure to reach the required standard of



A PEN OF TURKEYS.

[Copyright.]

TRADE SUPPLEMENT

excellence are sold locally as wasters. The eggs that are sold are sold for setting; and all the breeding is breeding for stock. An important branch of the business, one should mention here, is the sale of day-old chicks, and the reputation these Hinwick youngsters have for turning out satisfactorily from every standpoint has by now extended very far beyond the borders of Northamptonshire.

This mention of the "day-old" chicks brings us to the guiding principle of all the operations at the Hinwick Farm. The end aimed at in the production of stock is hardiness of constitution; and the means whereby this is achieved is the "open-air" treatment, applied as soon as the chicks have advanced sufficiently far to render exposure to the climate devoid of serious risk. After hatching, the youngsters are placed in the brooder-house shown in our illustration, where they remain for the first

and general management. The dry feed system is used, but not exclusively (it may be mentioned that the Hinwick Farm proprietors have evolved a very excellent dry chick food of their own for the purpose), and the food is given about every two hours. Special precautions are taken to prevent damage to weak or backward chicks, which in ordinary circumstances are apt to get pinned against the hard wall of the brooder by their more vigorous companions. This risk is obviated by placing such weaklings in a bag made of porous canvas, putting the bag in the centre of the sleeping section of the brooder, and securing it in position by a weight on one end. As soon as the chicks are considered ripe for a change they are transferred from this brooder-house to another, very similar in construction, but unprovided with any heating apparatus. Here they grow accustomed to the cooler temperature without being subjected to



THE MAIN RANGE OF BREEDING - PENS.

three or four weeks of their existence. These brooders are heated by lines of hot-water pipes supplied from a boiler over a small furnace in the centre of the house, the furnace being stoked with steam coal every night and an even temperature being carefully maintained. The greatest care is employed at this stage in feeding

the sharp variations of heat or cold that occur in the open air, and in due course they are ready to begin the open-air life in the rearing-ground at Hinwick, which, with its admirable natural shelter, provides all the fresh air they can need without admitting the biting winds that are apt to play havoc with young birds.

In Chain Gardens the runs are so capacious that most of the advantages of a free range are secured, without the drawbacks. The spinneys that girdle this enclosure are a valuable asset, both as a protection against wind to the occupants of the runs and as giving to the birds that use them as a foraging-ground the shade that is necessary for purity of plumage. A brief visit to the orchard—or, rather, the series of

traverses the entire length of the range, the upper part of the dividing walls consisting of wire netting; and one has only to put one's head inside one of these sheds to recognise the advantage in the way of purity of atmosphere that they have over the makeshift arrangements that one so often encounters. At the same time, one should add that the birds are absolutely immune from direct draughts, the wire-netted



SPACIOUS RUNS AND FINE SHELTER.

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orchards—disclosed an exceedingly pretty bit of country, through which runs a considerable stream, and some fine pens of Bronze Turkeys and Embden Geese, which, together with Aylesbury Ducks, apparently enjoyed the sole possession of this section.

But we must get back to the most ingenious demonstration of the fresh air principle as applied at Hinwick Farm. This is to be found in the scratching-sheds contained in the big phalanx of breeding-pens, of which we give a partial view; owing to the lie of the country it is impossible for the photographer to include the whole range. These scratching-sheds, with roosting-houses attached, form a long, low line of buildings, built on a highly scientific principle, with stout walls and roofs tarred, extremely commodious, and, judging by the looks of their inhabitants, as healthy as it is possible for scratching-sheds to be. While each shed is self-contained in the usual manner, they are all ventilated by the same current of air, which

apertures being well above the level of any place in the shed they are likely to occupy.

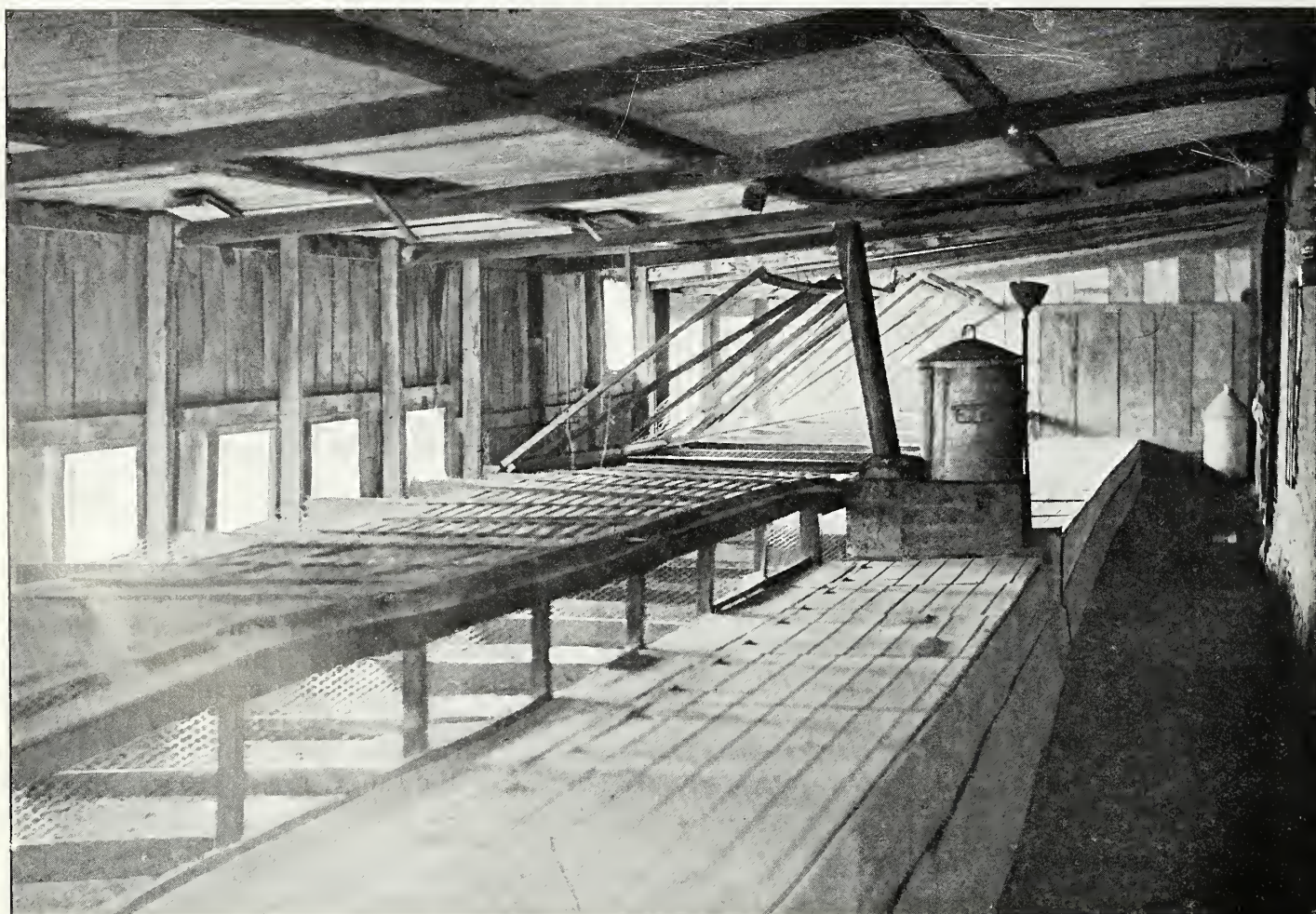
Nearly thirty pens were mated up at the time of our visit, and in the runs attached to these scratching-sheds we were able to gain an idea of the stock that is bred on the farm. Of the runs themselves there is nothing particular to say. Like the rest of the farm, they are of grass, the wire netting partitions being boarded to the height of about two feet from the ground, to ward off wind and prevent the occurrence of quarrels between a pen and its neighbour. Among the breeds here the Orpingtons seemed to predominate, and we noticed good lots of each of the three chief varieties, Buffs, Whites, and Blacks. At the end of the range, too, there was a fine pen of Indian Game. White Wyandottes were in evidence, and the non-sitting breeds were perhaps best represented by a likely lot of Brown Leghorns. Of crosses, the Indian Game—Buff Orpington is a strong favourite at Hinwick, its great table qualities ensuring it a ready demand

TRADE SUPPLEMENT

from poultry-keeping customers. * Minorcas, Barred Rocks, Langshans, and Houdans are also kept. In regard to the feeding, there are no startling innovations to record in this line concerning the Hinwick Farm; the warm morning mash of biscuit-meal, with sharps, and the night feed of grain, generally oats, which are employed, are what one would expect to find on an ordinary establishment, and the green food and grit are administered in the usual way. However, the whole science of feeding does not consist in the choice of materials, or even in their mixing, though it should be noted that the farm's proprietors have devoted much anxious attention to the latter subjects, and have produced some strikingly successful foodstuffs of their own.

There are no trap-nests at the Hinwick Poultry Farm, the proprietors having found that these do not repay the extra cost and labour they involve. In regard to hatching, they pin their faith to tank incubators rather than to the hot-air varieties; ten of the former are included in their plant. They do not limit themselves to one make of machine, and it is interesting to note that among a miscellaneous collection is one that was designed and constructed by themselves.

The incubator-room, storehouse, exhibition shed, and other buildings grouped at the back of the residence proved conclusively to our mind that the value of modern appliances is fully appreciated, and the way that previously existing structures have been utilised and fitted into a well-ordered scheme of arrangement is extremely ingenious. We have but one matter more to touch upon—the package of eggs. Everybody is familiar with the egg-box which is divided into, say, twelve cardboard compartments, each holding one egg; but the Hinwick folk claim that their method of packing ensures as much safety and less risk of jarring even than this well-known type of egg-box. In a word, they dispense with the compartments and rely upon careful packing in straw to keep the eggs end up and in position. From the explanation of the method given to us, it was easy to see that perfect security could be obtained by this means, and considerable economy—we are thinking of a large business in eggs—effected in the cost of egg-boxes; but it is equally obvious that it is one of those knacks which only the experienced poultryman acquires by practice and the habit that is second nature, and the novice had perhaps better leave it alone.



THE BROODER-HOUSE. CAPACITY, 600 CHICKENS.

THE WHITE LEGHORN POULTRY-YARDS, WATERVILLE, N.Y., U.S.A.

IT is but seldom that one has the opportunity of visiting a large ranch on which utility poultry, and utility poultry alone, is made to pay, and therefore it was with very great pleasure that we accepted the invitation of Mr. C. T. Hatch to see over his poultry-yards.

The farm is situated a short distance from the town of Waterville, and as it lies in a narrow valley which is wind-swept, and in which the cold settles, one would have thought that such a

Having worked on a salary for two years, Mr. Hatch became a partner in the plant on the share basis. This enabled him to have a greater say in all matters relative to the conduct of the farm. It was found after a year's work that the profit was eaten up to a certain extent by two things—namely, the high price of feed and carrying too many birds. To overcome the former difficulty, Mr. Hatch set to work to cultivate the sixty acres comprised in the plant, and, more-



A RANGE OF LAYING-HOUSES.

[Copyright.]

place was the least likely one for profitable egg-production. Yet we are bound to confess that even the difficulty of climate is surmounted, and the farm is a paying concern. The history of the farm is interesting, but, more than this, it is instructive, as showing how, by management and thought, a failure can be turned into a success.

The White Leghorn Poultry-Yards were established in 1898, and though £6,000 was invested the venture proved to be a failure. In 1905 Mr. Hatch took the management into his own hands, and set to work to apply business principles to the plant. At that time five hands were employed, but by organisation the staff was reduced to two men. This was brought about by centralising the work and by grouping together a number of the smaller houses into large ranges.

over, he rented an additional eighty-six acres in the vicinity. This proved a very successful venture, and now practically all the food used on the ranch is home-grown.

"No fancy-pay manager" is one of the mottoes of the farm. In Mr. Hatch's own words the staff is described as follows:

"The regular crew consists of two men and myself. These men are hired by the year; one for the dairy work and one for the poultry work. He is the best egg-getter and chicken-raiser I have ever known. He has no theories (no man is allowed on this plant who has such things in his head), he is a hard worker, and is on friendly terms with the birds. His work includes cleaning the dropping-boards, a work that is never mentioned in these much-advertised 'one man for

TRADE SUPPLEMENT

2,000 hens' systems. But it is work that someone must do, whether he be man or boy, for the boards do not clean themselves. In the spring I hire two extra men for seven months (one for the hops), and last year the

ings are curtain-fronted scratching-sheds, each 12ft. square, but the loft above in each case is packed with straw. Windows are also provided in front of the curtain, but these are never closed unless the temperature registered is below 50deg.

of frost. Mr. Hatch does not believe in pampering his fowls, for he says: "Don't keep your Leghorns shut up tight. They can stand just as much cold as any other variety, and if you will follow this fresh-air plan of housing you will never have a frosted comb. Give your birds a chance to get hardened to the cold, and when an awfully cold snap does come they will be ready for it. Their forces of resistance will be equal to it. As said above, I never close the cheese-cloth frame or let down the curtain in the front of the roosting-closet until the thermometer registers at least 18deg.

below zero. In the coldest weather, by this method, my birds do not frost their combs and keep right on laying. For instance, this last cold snap the egg-production of our flock increased instead of decreased. You may call this luck or, more thoughtfully, vitality. I believe it is the

dairy paid almost all the wages of the four. Don't go into the poultry business on a large scale unless you have 100 acres of land and ten cows. This plant will house 4,000 layers, but I don't like to carry any more than I can raise the feed for. Then, too, by not being crowded in the spring, and thus being able to yard the birds with 16 in each pen, I am able to get eggs that will run 90 per cent. fertile in February and hatch strong chicks. Vitality is paramount. There can be no egg-production without vitality." Vitality is bred for, and the selection of stock is carried out with this object in view. Each year from the pullets that mature and commence laying earliest, 25 are selected, and from these are bred the cockerels that head the pens the following year. These pullets are mated to the most active, vigorous unrelated male obtainable. Mr. Hatch believes in keeping the blood red-hot, and to this does he attribute his success in breeding such a strong strain of heavy layers. He does not line- or in-breed, for his object is not the perpetuation and development of fancy points, but rather to get all the eggs possible, the highest fertility, and strong chicks. This can only be done by the introduction of new blood each year.

As has already been stated, long ranges of poultry-houses facilitate the work. The build-



HIGH VITALITY COCKERELS.

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THE SEASON'S CROP OF PULLETS.

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latter. Another thing I do here, in order that the flow of eggs may not be interrupted, is to clean the pens at night when the birds are on the roosts. This is the only time to clean out hen-houses, as the privacy and freedom of the birds' home is not interfered with, and when they wake up in the morning their pens are clean and they go right along about their business. When we

used to clean out in the daytime, there would be a big drop in eggs for a few days afterward. If you have had this happen, try doing the work at night and see if there is any stop in egg-production."

Incubation is carried out by artificial methods, as is also the brooding. The experience gained on this ranch is very instructive; therefore we give particulars as to the former failure and present success. The brooder-house is equipped with the overhead pipe system, and as now arranged gives most pleasing results. The house is 125ft. by 16ft., with pens 3ft. wide and 6ft. long. The hovers are 3ft. by 3ft., with alley-way 3ft. wide. The house will hold 2,000 chicks. Up to two years ago great difficulty was experienced in raising the chicks, owing to the way the piping was arranged in the hovers. As originally built there were four

pipes in the back and four in front that ran the length of the house through the box-hovers. This left an air-space in the centre of the hovers. This principle was good in theory, but did not work out in practice. If the chicks were in the back of the hover and it became too hot, they would move toward the air-space in the centre, but find-

ing it too warm there they would not go farther to the front and come out, as the second row of pipes were radiating heat in the front. Consequently the chicks would be overheated and eventually die. If the chicks knew enough to go through the warm space in front so as to get the cool air of the pen, this principle would be right, but chicks do not know enough to do this. Mr. Hatch had some ideas of his own about brooding, one being that it was necessary to keep the back of the hover so hot that the chicks could not stay in it, the principle being the same as in sleeping, where your body is warmed with one temperature and you breathe another. It was found that the only satisfactory thing to do was to keep the chicks out of the back part of the hover, allowing them to breathe air other than that which is heated and still having a place for them to go when cold. Mr. Hatch says that "the

reason why pipe systems are criticised so much is because hovers are not kept hot enough; there isn't space enough in the hover for chicks to go to when it is too hot; the heaters are seldom big enough, and the hovers never tight enough in the back. My hovers are double-boarded, both top and back, with paper between, and I have no difficulty in keeping the temperature above 100deg. with all the draughts off on the heater. In a pipe system you must keep the back part of the hover not only warm, but hot—it must be hot enough to suit the weakest chick and warm the chicks instantly when they enter it. As my brooding system is now arranged—with the pipes in the back—it is often 120deg. back there for days, but there are no longer any heated pipes in the front, and the chicks move forward to the temperature they like. Another idea in pipe systems is the moving of

the chicks from pen to pen as they get older, in order to get them further away from the pipes. There is no need of this. I fixed all my hovers the same distance from the pipes, keeping each lot of chicks in the same pen throughout the brooding season. The same temperature is kept for chicks six weeks old as that for chicks a day



EXERCISE IS ESSENTIAL TO HEALTH.

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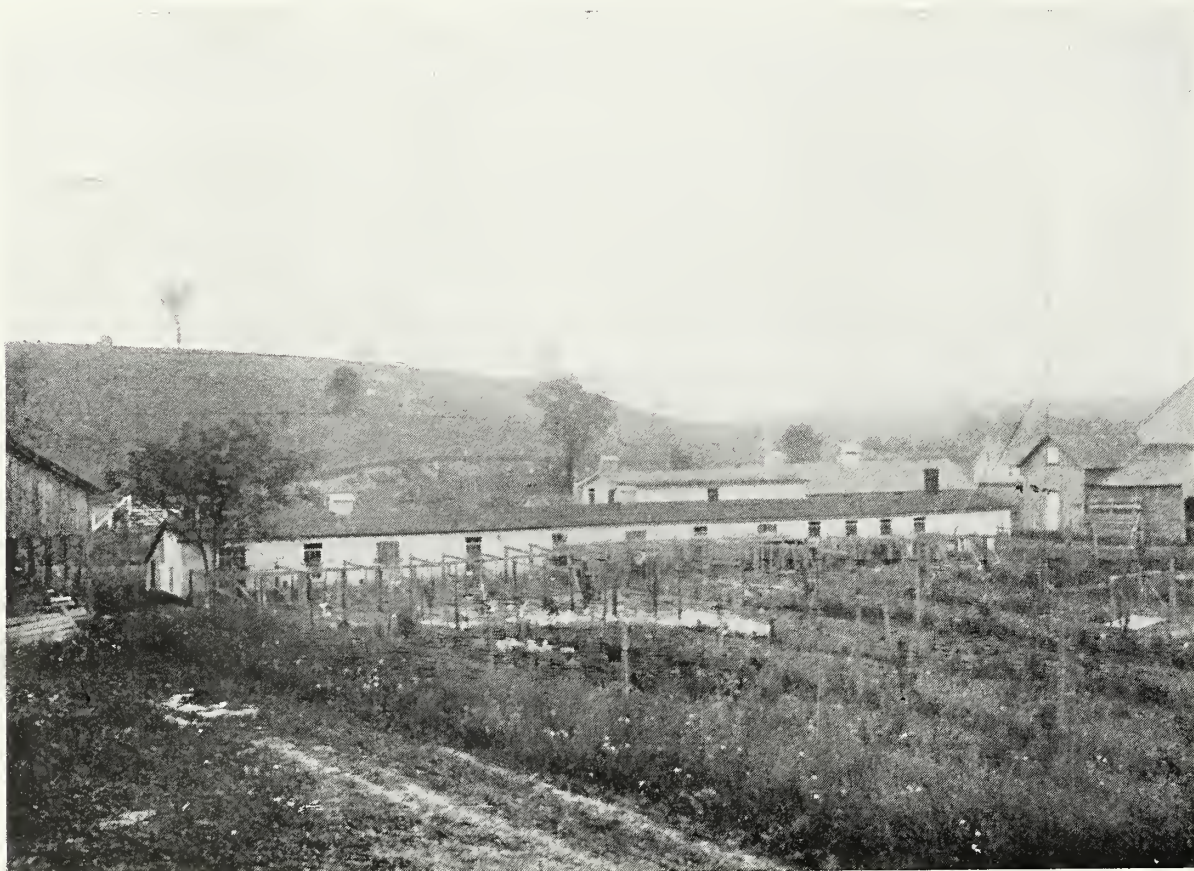
old. With me, chicks six and eight weeks old do not stay in the back part of the hover, but are out in one of the front spaces with their heads stuck through the curtain into the pen."

As one would expect, since the greater part of the food is raised on the farm, it differs somewhat from the general practice, but if one can judge by results it is certainly a satisfactory method. The grain is scattered in the litter, three handfuls to each pen of fifteen birds. It takes three-quarters of an hour to do the feeding. As the poultrymen pass through the pens at the morning feed they make notes on a pad provided for that purpose, and wherever they notice in any of the pens or houses anything that needs attention, such as grit-boxes that need to be filled, hoppers that need more mash, &c., they make a note of same, and as fast as each item noted has had attention, it is checked off the pad. Grit,

TRADE SUPPLEMENT

charcoal, and oyster-shells are in the hoppers continually before the fowls, also a large galvanised iron hopper holding one-half bushel of dry mash of Mr. Hatch's own formula. The warm mash consists of oats, peas, and barley, maize-meal, mixed feed, oil-meal, and beef scraps. To every 1,200lb. of this is added 500lb. maize-meal, 500lb. mixed feed, 5 per cent. of this total is again added in oil-meal, and 15 per cent. of this total in beef scraps. In addition to the beef scraps in the mash, a hopper of beef scraps is kept before the birds, except in the case of pullets which began laying in September, when no extra beef scraps are given and the amount in

weeks of age we discontinue the pinhead and begin the whole grain ration, which consists of whole wheat in the morning and cracked corn at night. For the first two weeks pinhead oatmeal is the only feed given, and is fed to them five times a day. The chicks, of course, have plenty of grit and charcoal before them in hoppers all the time. At two weeks of age I begin feeding a dry mash in hoppers. The formula for this mash is the same as the formula of the mash fed to layers, with the exception that in the chick mash I use only 10 per cent. of the total weight of beef scraps and eliminate the oil-meal entirely. As soon as I begin the dry mash feeding to the



EXTERIOR OF BROODER-HOUSE.

[Copyright.]

the mash is reduced to 10 per cent. A pullet that begins laying in September will, as a rule, moult in December, unless a wide ration is fed.

In view of the high rate of mortality found in a number of American farms, the system adopted for feeding the chickens at Waterville is worthy of mention, since the death-rate is very low indeed. Again in Mr. Hatch's own words: "We used to feed a prepared chick food. For the past two seasons, however, we have fed our brooder chicks pinhead oatmeal very successfully. Our schedule for feeding them is as follows: From the time the chicks are put in the brooder until four weeks of age they are fed nothing in the way of whole grain but pinhead oatmeal. At four

chicks I reduce the number of feedings of the pinhead oatmeal to three feedings a day. At four to six weeks of age we remove the partitions in the brooder-house, making four small pens into one large pen, and in this large pen erect temporary roosts. At the same time also the small outdoor yards are opened at the ends and the chicks are given the range of large, grassy runs. The sexes are divided and a little later the young stock is transferred to colony houses, where they have an excellent free range. At four to six weeks of age Leghorn chicks will show the result of too close confinement, and the only way they can be braced up is by giving them a larger space to roam over."

THE MARKETS & MARKETING

CONDUCTED BY    VERNY CARTER

Market Reports, Week Ending January 19.

There was an upward tendency in trade, and the best qualities of Surrey and Sussex birds were in better demand, but for inferior qualities trade was dull. Capons, which were not plentiful, realised good prices. There was also a good demand for Ducklings and Ducks. Pheasants and Partridges were scarcer. French and Irish Turkeys were cheap, meeting with slow demand. Both foreign and English eggs were plentiful for the period, and values receded by from 6d. to 9d. per 120. Russian eggs were exceptionally plentiful and cheap.

Week Ending January 26.

Moderate trade prevailed with firm prices. English chickens from 3lb. to 4lb. each were readily bought up. The bulk of the birds marketed were inclined to be old and hard. Capons met with fair demand, realising from 5s. to 7s. 6d. each. There was a good demand for fat old hens, supplies being short. There was a slight change for the better in the egg trade, and values did not recede as expected. Russian eggs, however, were very plentiful and realised very low values.

Week Ending February 2.

3lb. to 4lb. fatted chickens met with good demand, also Ducks and Ducklings. Trade during the week moderate, with firm prices for birds of good quality. Eggs were plentiful; values receded generally. Game was inclined to be cheaper owing to slackened demand. Guinea-fowls were in fair demand, averaging about 2s. 6d. each.

Week Ending February 9.

There was little or no change from previous week. Good English chickens were scarce. Capons met with good demand, values being about the same as last week. Ducks and Ducklings were in demand, the public having tired of Game. The Game season was practically over. Hares were dear. Guinea-fowls met with good demand, realising from 2s. 6d. to 2s. 9d. All classes of eggs were slightly more plentiful.

THE EGG TRADE.

FOREIGN IMPORTS DURING JANUARY, 1910.

THE past few weeks have been rather a trying time for those engaged in the foreign egg trade. Supplies though more plentiful than during the corresponding

period of 1909 have varied considerably both in quality and quantity from week to week, and trade being rather dull, values have ruled slightly lower than is usual at this period of the year. The trade in Russian eggs has suffered more than any other, and those dealing in them have in many cases experienced loss. The supply of Russian eggs during last January exceeded that of January, 1909, by some 38,000,000 eggs, the bulk of which came from the Cold Stores in Russia and proved to be of inferior quality. During one week values receded over 40 per cent. The merchants were powerless; they had to clear themselves as quickly as possible, as eggs that have been cold-stored deteriorate rapidly when taken out of the cold chambers. From Denmark, Germany, France, and Italy slight increases are recorded, and a small decrease from Austria and those countries placed in the Trade Returns under the heading of "other countries." The total increase recorded for January, 1910, over January, 1909, is 324,586 great hundreds.

THE LIVE HEN TRADE.

DATES OF THE JEWISH FESTIVALS DURING 1910.

TO a very large proportion of the poultry-producers in this country the dates of the Jewish festivals, when old hens form such an important article of their diet, are simply a matter of conjecture. Owing to the lack of exact knowledge of this subject, many consignments of birds are marketed unprofitably.

The Jews are great lovers of poultry, and consume large quantities all the year round, excepting, of course, during certain periods, as a "Shomer" informed me at an interview. The duty of a "Shomer," or overseer, is to attend the various markets and sources of supply from which they obtain their food during the periods of their feasts. Thus at one of the large London dairies who supply the wealthier fraternity with butter and milk during Passover, an overseer is always on the premises, sleeping there. His duty is to watch the preparation and handling of the milk and the making of the butter,

which is carried on under his direct supervision. Another overseer is sent down to the country to supervise the milking of the cows at the dairy farm whence the supply is derived. All the utensils, from the churns in which the milk travels to town, and the cans in which it is delivered to the customers, must be absolutely new.

In a similar way they are particular that the fowls they consume are free from any illness or disease such as roup, cold, &c., such birds being rigorously discarded by the "Shomer." The Jews consume very large quantities of fowls during the winter months. The poorest of the poor will struggle to save enough to buy poultry for their Sunday dinner, purchasing even a quarter of a fowl with which to flavour their favourite vermicelli soup. It does not signify how old or tough the bird is. It is not so much a question of cost with the Jews that makes them indifferent to the tenderness of the flesh; they prefer the old birds, as they use them principally for soup-making, and when young birds are used for this purpose they are apt to boil to pieces. Also they say there is not the same amount of flavour in a young bird as there is in an old one.

The first of their festivals, the Passover, commences on Saturday, April 23 next, and ends on May 1. The birds for this festival would be killed on the previous Wednesday, Thursday, and Friday. These are the three great market days before the Passover. There will also be two more market days before Passover finishes; these will be held this year on April 28 and 29 and will constitute the last market days of Passover.

The next period when live hens will be in demand is on June 9 and 10 for Pentecost, which falls on the following 12th and 13th. The birds should not arrive later than the 10th; if they do they will be too late, as the Jews seldom, if ever, kill on their Sabbath (Saturday). After Pentecost there is a considerable interval till the next festival, their "New Year," which commences on the evening of Monday, October 3, at five o'clock. A good many birds would be killed on the Sunday and Monday mornings, but birds should be on the market by the Thursday or Friday previous at latest. The Great White Fast commences on Wednesday evening, October 12, and lasts twenty-four hours. Then comes the Feast of Tabernacles, which lasts from October 17 to the 24th inclusive. The principal killing days for this feast will be on the 13th and 14th, and Sunday, the 16th of October, and again on the 20th, 21st, and 23rd. This is the last festival which will take place during 1910.

When marketing live hens, we would counsel our readers to send their birds to salesmen and dealers of repute only, as in this particular branch of the poultry industry there are many on the look-out for the unwary. The bait with which they set their traps is generally the exceptional terms they offer; and one or two bad cases, where persons have been swindled, have been brought to our notice. When dealing with firms on the London and other recognised markets, intending con-

signors can always find out their *bona fides* by applying to the Superintendent of the Market.

The principal outlet for live hens is, of course, in London, the Central Markets being the great centre. There is also a demand for old hens in the Midlands, at Manchester, Leeds, and Bradford, where there is a considerable Jewish population, and birds can be marketed to advantage.

EGG-GATHERING IN RUSSIA.

TO the southward of Moscow, and stretching in a broad belt from the Carpathians to the Urals, lies the black-earth region of Southern Russia, where Nature would seem to foster indolence in the tiller of the soil, for she has provided that stoneless black loam known as loess, so fertile that for periods of from fifty to seventy consecutive years corn has been grown without manure.

In this region, says a writer in *Chambers's Journal*, has sprung up an industry which, though little is known about it, contributes to the well-being of Western Europe, forming as it does an ever-increasingly productive source of those food supplies of which our islands have need.

In this fertile region settled some eleven years ago a merchant with his family. To-day this gentleman is rewarded by seeing conjured into being by his industry and forethought an establishment covering many acres, the source of supply of millions of the eggs which England consumes, thousands of the spring chickens which appear on her tables, as well as of the ducks, geese, turkeys, &c, which a Christmas season finds on the board of rich and poor alike. How was it done? How is it done? The answer to these questions may be of interest to readers.

The largest eggs in Russia come from the black-earth belt. The forest belt in the latitude of Moscow and northwards gradually passes into the ante-steppe region as the traveller turns southwards. In the ante-steppe region undulating plains, with here and there clumps of trees, are the rule; but farther South the trees creep down by the hollows which the watercourses have carved in the apparently illimitable steppe. Here the peculiar co-operative instincts of the Russian character have massed the peasantry—the farmers, let us call them—in large village communities. The landscape has assumed the aspect of a huge farm without the farmhouses dotted here and there. There are no made roads. Tracks intersect and lead as far as the eye can reach towards the next village, unseen beneath the horizon. What machinery then was there among such surroundings for the setting in motion of an industry? There was the raw material for the industry; but methods had to be devised and helpers had to be trained before London could benefit by the product of the steppe.

By dint of careful study, the founder of the industry which we have under review began to appreciate the

TABLE OF PRICES REALISED FOR HOME, COLONIAL, AND FOREIGN POULTRY, GAME, AND EGGS FOR THE FOUR WEEKS ENDED FEB. 16, 1910.

ENGLISH POULTRY—LONDON MARKETS.

DESCRIPTION.	PRICES REALISED DURING THE MONTH.			
	1st Week.	2nd Week.	3rd Week.	4th Week.
Surrey Chickens	3/3 to 4/6	2/9 to 5/0	2/9 to 5/0	3/6 to 5/0
Sussex	3/3 " 4/6	2/9 " 5/0	2/9 " 5/0	3/6 " 5/0
Yorkshire	2/6 " 3/6	2/6 " 3/6	2/6 " 3/6	2/6 " 3/6
Boston	2/3 " 3/6	2/3 " 3/6	2/3 " 3/6	2/6 " 3/6
Essex	2/3 " 3/6	2/3 " 3/6	2/6 " 3/3	2/6 " 3/6
Capons	2/3 " 3/6	2/3 " 3/6	2/6 " 3/3	2/6 " 3/6
Irish Chickens	5/0 " 7/6	5/0 " 7/6	5/0 " 7/6	5/6 " 7/6
Live Hens	2/3 " 3/3	2/3 " 3/0	2/3 " 3/0	2/3 " 3/3
Aylesbury Ducklings ..	1/9 " 2/6	1/9 " 2/9	1/6 " 2/6	1/0 " 2/6
Ducks	3/0 " 4/6	3/6 " 4/6	3/6 " 4/6	3/0 " 4/6
Geese	5/0 " 7/0	5/0 " 7/0	5/0 " 6/6	5/0 " 7/6
Guinea Fowls	2/3 " 2/6	2/3 " 2/9	2/3 " 2/9	2/0 " 2/9
Turkeys, per lb.	0/8 " 0/10	0/8 " 0/11	0/8 " 0/11	0/8 " 0/11

ENGLISH GAME—LONDON MARKETS.

DESCRIPTION.	Each.	Each.	Each.	Each.
Grouse	—	—	—	—
Partridges	2/6 to 2/9	2/6 to 2/9	2/6 to 2/9	2/3 to 2/6
Pheasants	2/0 " 2/6	2/6 " 2/9	2/9 " 3/0	2/0 " 2/6
Black Game	—	—	—	—
Hares	3/0 " 3/6	3/0 " 3/6	2/6 " 3/6	3/0 " 3/6
Rabbits, Tame	1/0 " 2/0	1/0 " 2/0	1/0 " 2/3	1/0 " 2/3
" Wild	0/7 " 0/8	0/9 " 1/2	0/9 " 1/2	0/9 " 1/2
Pigeons, Tame	—	—	—	—
" Wild	—	—	—	—
Wild Duck	2/6 " 2/9	2/6 " 2/9	2/6 " 2/9	2/0 " 2/3
Woodcock	—	2/6 " 3/0	2/6 " 3/0	2/0 " 2/6
Snipe	0/9 " 1/6	0/9 " 1/6	0/9 " 1/6	0/9 " 1/3
Plover, Golden	1/0 " 1/3	1/0 " 1/3	1/0 " 1/3	—

ENGLISH EGGS.

MARKETS.	Per 120.	Per 120.	Per 120.	Per 120.
LONDON	19/2 to 21/0	19/2 to 20/0	18/4 to 19/6	18/4 to 16/8
Provinces.	Eggs per 1/-	Eggs per 1/-	Eggs per 1/-	Eggs per 1/-
MANCHESTER	8 to 9	8 to 10	8 to 10	—
BRISTOL	1/3 per doz.	1/3 per doz.	1/3 per doz.	1/3 per doz.

FOREIGN POULTRY—LONDON MARKETS.

COUNTRIES OF ORIGIN.	PRICES REALISED DURING THE MONTH.			
	Chickens. Each.	Ducks. Each.	Ducklings. Each.	Geese. Per lb.
Russia	—	—	—	—
Belgium	—	—	—	—
France	—	—	—	—
United States of America ..	—	—	—	—
Hungarian	—	—	—	—
Canada	—	—	—	—
Australia	—	—	—	—

IMPORTS OF POULTRY AND GAME. MONTH ENDED JAN. 31, 1910.

FOREIGN GAME. LONDON MARKETS.	Price Each During Month.	COUNTRIES OF ORIGIN.		DECLARED VALUES.
		Game.	Poultry.	
Capercaillie	2/3 to 3/6	—	—	—
Black Game	1/9 " 2/0	—	—	—
Partridges	0/11 " 1/2	—	—	—
Quail	—	—	—	—
Bordeaux Pigeons	0/9 " 1/4	—	—	—
Hares	—	—	—	—
Rabbits	0/6 " 0/8	—	—	—
Snipe	—	—	—	—
Totals	—	£23,974	£89,383	—

IRISH EGGS.

DESCRIPTION.	1st Week.	2nd Week.	3rd Week.	4th Week.
	Per 120.	Per 120.	Per 120.	Per 120.
Irish Eggs	12/0 to 13/0	9/9 to 10/9	10/6 to 11/0	10/6 to 11/0

FOREIGN EGGS.

DESCRIPTION.	1st Week.	2nd Week.	3rd Week.	4th Week.
	Per 120.	Per 120.	Per 120.	Per 120.
French	10/6 to 12/6	10/6 to 11/6	10/6 to 11/6	10/6 to 11/6
Danish	11/0 " 13/6	11/0 " 13/6	9/6 " 12/6	10/6 " 12/6
Italian	10/3 " 12/3	9/6 " 11/6	9/6 " 11/6	10/6 " 11/9
Austrian	6/9 " 9/0	6/9 " 9/0	7/0 " 10/0	7/0 " 10/0
Russian	6/6 " 7/0	5/0 " 6/6	5/6 " 7/0	5/6 " 7/6
Australian	—	—	—	—
Canadian	—	—	—	—

IMPORTS OF EGGS. MONTH ENDED JAN. 31, 1910.

COUNTRIES OF ORIGIN.	Quantities in Gt. Hund.	Declared Values.
Russia	405,100	£156,236
Denmark	214,608	120,207
Germany	68,978	29,750
Italy	68,580	39,435
France	37,423	22,241
Canada	—	—
Austria-Hungary	181,366	83,293
Other Countries	281,922	104,817
Totals	1,257,977	£555,979

worth of the peasant character, and began to train a few selected from his neighbourhood to leave their farming pursuits and become his buyers. These peasants were trusted with money, and were asked to ride with their carts through certain areas, buying up eggs in the villages, and to return with them to headquarters. There proved to be black sheep among them who, when thus financed, never returned; but in the majority of cases it is pleasant to relate that the *moujik* invested with the dignity of a trader seems to become too self-respecting to be a pilferer. Remembering his intense poverty, one wonders the more that he can so well resist temptation to misappropriate the money with which he is trusted.

It must have been, however, a very gradual, very wearying process this working into shape of a band of peasants and making them into buying-agents. After eleven years the system has grown to such proportions that stocks of eggs to the number of sixteen millions are in store at one time. Chickens are in process of fattening in lots of one hundred and thirty thousand, besides geese, ducks, &c., all or a large part of which have been procured through the medium of the peasant-trader.

It is a curious and interesting sight to watch the return of a trader with his cartful of eggs. For a period of eight to ten days he has been on the road, sleeping on his cart, eating on it, travelling night and day without pause of long duration. In that time he has gradually accumulated eggs to the number of about seven thousand, arranging them row on row with separating layers of straw. Perhaps twenty-five will be chipped, and perhaps none actually broken, in his load, so skilful is he; and yet a glance at his springless, four-wheeled cart makes one but marvel the more.

The eggs are unpacked from these carts and counted in tens. So delicate becomes the touch of the counter that, no matter how many eggs he may lift in his hand at one time, if the shell of one of them be cracked the fact is noticed. Such cracked eggs are placed on one side, and afterwards their contents are tinned and sold to cake manufacturers. The crates in which the eggs are now placed are capable of holding about fifteen hundred in their eighteen compartments, and properly aerated and dried shavings, quite non-odorous, are used in place of the straw employed by the peasant-buyer of the eggs. These crates are now placed in cold-air chambers, where the eggs are kept at a temperature slightly above their freezing-point till required for the market. Then the crates are removed from the cold-air chambers and the eggs powdered with borax. The candling (or putting the egg up to a light for examination internally) has now to be done, and the "blacks" and "spots" have a sale in Russia. The eggs which show no black spots when held up to the light are now sorted into sizes, large, medium, and small, and packed in crates for their long journey of nearly one thousand miles by rail to Riga, where they are shipped for London. From twelve to seventeen days are usually reckoned upon for this journey.

Besides the egg industry, business talent finds other lucrative channels for its exercise. This is the largest poultry-farm in the world, but hardly in the ordinarily accepted sense of the term. Chicks are bought and fattened for one glorious fortnight on millet porridge, then their tongues are cut, they are plucked and trussed, packed in crates, and frozen hard in cold store till required for market. A similar fate is meted out to the geese which may be seen coming into the yard in droves in late autumn. One is astonished to hear that this or that noisy drove has come fifty miles, and that they have progressed hither by ten-mile stages, taking five days on this their last journey. In spite of this some of the foot-sore, dust-covered, web-footed pedestrians have energy enough to attempt to reach the water of a lake which temptingly occupies the centre of the compound. Some, however, have long passed feeling of this kind, and are being carried by the goosherd, dead from the fatigues of the march. The feathers of the slain birds are utilised to make down. The feathers are first sorted by ingenious machines, of German make, according to their specific gravities. Next, feathers of a certain quality (and producing down of a certain quality) are fed into the hopper of a disintegrator, a machine which has a very wide application, and can grind anything as hard as bones or as soft as breast feathers of a duck. The result of the passage of the feathers through this machine and a subsequent sifting is very wonderful. A down has been produced and the quills have disappeared.

Electric light, telephones, all up-to-date household appliances are to be found in this out-of-the-world spot. One is surprised to find suction gas-engines (the very modern and economical form of power-producer) installed here. Two engines, aggregating 120-horse power, made by the Campbell Company, of Halifax, Yorkshire, supply the power needed for the production of cold, the power needed for the production of electric light, and the power to drive the flour mill and the machine to prepare the *prosa* (millet) for the chickens food.

THE WELSH POULTRY BOOK.

ACTING on the suggestion of a number of our Welsh readers, we are publishing a Welsh edition of "The Record Poultry Book," and we have pleasure in announcing that it will be ready by the time these pages are through the press. The Welsh edition is a translation of the English, the photographs and pictures being reproduced. Great interest is attached to its publication, since it is the first book dealing with poultry-keeping to be issued in the Welsh language. Wales is at present in a very backward state as regards this industry, but great development is looked for as a result of the "Egg Train," organised by the National Poultry Organisation and the Great Western Railway, that is to visit the South of Wales during the next few weeks.

ANSWERS TO CORRESPONDENTS.

The Editor will be glad to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered if possible in the issue following their receipt. The desire is to help those who are in any difficulty regarding the management of their poultry, and accordingly no charge for answering such Queries is made. Unless stated otherwise, Queries are answered by

F. W. PARTON,

Lecturer in Aviculture, The University, Leeds.

Poultry-Fattening.

I hope to be leaving here in a short time as a qualified poultry-fattener, and am going into business in another district on my own account. The breeds in the district are not what one would like to commence to get a name on, so I propose to keep three or more pens of the best table classes, to supply eggs for setting, and pure cockerels at a reasonable price to surrounding poultry-breeders, and rear chickens for myself in the early part of the year. We have a co-operative egg society in our district, and most of the farmers are members. Egg-production, therefore, is the most important thing at present, but I think if a farmer kept a flock of White Wyandottes for eggs and crossed these with a good table class he would get both eggs and table-birds. I find it difficult to choose a breed. In a back number of your paper Mr. W. Brown says a chicken can be reared ready for the fattening coop for 9d. What foods did he use? Your advice on the following points would be greatly appreciated:

1. Best pure breed and best cross for table.
2. Best pure breed and cross to combine eggs and table.
3. How a chicken can be reared for 9d., or even 1s.—J. Porter (Avondale, Rathdrum, Co. Wicklow).

The poultry-fattener in any district where egg-production is the chief object of farmers and others is very severely handicapped, in that his supplies are not of the grade that will produce the best class of market fowls. That explains why several promising ventures have failed. Even in Sussex the problem is to secure enough birds to keep the cages full and to keep up a regular supply to traders or private customers. Something can be done by breeding your own chickens, but experience at home and abroad has shown that to make such a business successful collection must be made from many breeders. If it can be proved to the latter that there is a paying outlet for chickens, they may be induced to take up that branch and to keep the right class of fowl. You could help greatly in that direction by supplying them with suitable birds as breeding stock, and inducing them to hatch much earlier than is the case at present. It would occupy too much space to give the table of foods supplied in the experiment to which you refer, but we are sending you by post a copy of the report in which you will find full particulars. In reply to your questions: 1. As a pure breed you would find the Buff Orpington excellent, and for crosses a Faverolles cock on Buff Orpington hens gives quick-growing, meaty chickens. Another useful cross is between a White Wyandotte cock and Buff Orpington hens. 2. White Orpington if pure, and for crosses the last cross named in No. 1. 3. This you will find in the report sent you. We shall be glad to give you any further help.

E. B.

Size of House.

Relative to a recent article in the ILLUSTRATED POULTRY RECORD, which I read with much interest, will you please state in your next issue how large a house should be for 25 birds?—A. M. (Bishop's Stortford.)

The space necessary for a given number of fowls in a roosting-house is variously estimated, according to the construction and ventilation of the building—and the opinions of different authorities. Thus it is sometimes stated that there must be an allowance of nine inches of perch room per bird, or three square feet of area for each, and so on. Such estimates are useful enough as far as they go, but they do not go far enough unless they also take into account the requirements of the fowls in relation to the cubic air space. Owing to the divergence of opinion as to the proper method of calculating the number of birds a poultry-house should properly accommodate, a series of experiments was conducted in 1904 at the South-Eastern Agricultural College, Wye. In the result it was shown that in wooden poultry-houses with ventilation at the top each bird must have ten or more cubic feet allotted to it. The maximum number is found by dividing the volume expressed as cubic feet by ten, and—in the words of the report—"we prefer to keep within this number." It must, however, be remembered that in open-fronted houses the conditions differ in proportion to the space that is permanently open, but that if by means of shutters or sliding glass windows the house may be almost entirely closed, it would not be safe to depart from the rule based upon the cubic air space.

J. W. H.

Double Run and House for Twenty.

How large should I want a run, to be divided into two, and roost and scratching-shed for 20 fowls? My land is somewhat heavy, and it would be necessary to keep the fowls up in November, December, and January, except on dry days. I could cultivate one of the runs, but would like one grass, with fruit-trees in both runs.—M. (Herts.)

The size of a run is more or less a matter of theory for the purposes of an estimate, but relatively wide differences are found in practice, according to the methods of management and practical experience in particular situations. More is usually lost than gained through the endeavour to stock the ground to its utmost carrying capacity, and it is worthy of note in your case that a heavy soil cannot be so heavily stocked—and remain sweet—as a light one. However, your fixing of the number of fowls as 20 suggests the advisability of your reference to the November, 1909, issue of the ILLUSTRATED POULTRY RECORD, wherein there is an article by Mr. G. A. Palmer entitled "How to Lay Out

an Acre." The advice given in that article, which is illustrated by plans and photographs, should be very useful in your circumstances, and the shed and run accommodation is calculated upon your basis of 20 fowls.

J. W. H.

Tuberculosis.

"E. G." seeks information regarding a Brown Leghorn which has lost flesh rapidly after suddenly ceasing to lay. Comb and wattles shrunken and faded in colour, and appetite somewhat diminished.—(Tipton.)

The particulars given are not as full as might be desired. There is, for instance, no mention of the presence of diarrhoea or thirst, but if the latter symptoms should have been included along with those given, it looks extremely likely that the pullet has tuberculosis. We should recommend its destruction, and the carcase burnt, unless it is desired to make certain of the disease by having it examined. Tuberculosis is most contagious, and disinfection of the tainted runs is imperatively necessary. Particulars of conditions under which post-mortem examinations are made will be found in another column.

H. B. G.

Points of Utility Leghorn Cockerel,

I have two White Leghorn cockerels, and, only wishing to keep the better one, I would be obliged if you would tell me the points of a good utility cockerel. I may mention that one has a larger comb and longer wattles. Also, should the small hole of hen-house be closed up on a cold or frosty night, when said house is lined with felt, floor cemented and rain-proof?—K. E. D. (Carr-Bridge).

The bird should be fairly large, but not abnormally so, the comb perfectly upright, and not too huge. Broad across the breast, and a good distance apart between the legs, showing no sign of leg weakness, rather tall on legs; tail not carried too high. Good sound constitution is of first importance in selecting a male bird for utility purposes. Yes; most decidedly the trap-door of your poultry-house should be closed on frosty nights, especially as the house floor is cemented, which makes it additionally cold.

Chickens' First Feed.

I see from time to time varying advice as to the best time for giving chickens their first feed, it being stated by different writers that twenty-four hours, thirty-six hours, and in some cases seventy-two hours, is the best. May I trouble you for your opinion on this matter?—F. P. (Southampton.)

The first feed should be given to chickens twenty-four hours after hatching, but even then no attempt should be made to force them; when nature requires food small difficulty will be experienced in getting chickens to eat.

Testing Eggs Before Incubation.

I read the other day in a local paper that all eggs before being set under hens or put into incubators should be "tested out." I am at a loss to know what this means, and as I hatch out a number of chickens each year by both methods, it would be a great help to me to know what the advantage is.—F. W. (Plymouth.)

It is difficult to know what the local paper meant by "tested out" the eggs before using them for incubation—if it meant to imply that the eggs should be tested as to fertility, it is simply nonsense; but in all probability they meant that only good eggs, so far as shape, size, smoothness, of shell, and freshness, should be selected. We might be able to tell you what the advantages are, by a perusal of the article which appeared in the local paper, but the brevity of your extract renders this impossible.

Bottomless Coops.

Having reared some chickens last summer in bottomless coops, I should be glad to know whether it would be safe to do so in the early spring.—M. M. (Darwen.)

The necessity for bottom boards depends mainly upon the season and the state of the ground, but they are generally required until well on in the spring at any rate. Unless you are careful the use of boards may be quite as productive of trouble as their absence in wet weather. I have found it advisable, and quite satisfactory, when using them in winter or during a wet spell, to scrape them thoroughly just before shutting-up time and dust them over with finely slaked lime, fastening the chickens in for the night immediately afterwards and before they can carry any more damp inside the coop.

Dry Feed System.

Will Mr. Parton kindly describe the dry system of chicken feeding?—W. J. (Grimsby.)

The system, as the term implies, means giving the chickens, from the first, small dry grain, such as broken wheat, dari, millet, canary seed, coarse oatmeal, rice, buckwheat, hemp, and granulated meat. Upon a combination of these seeds chickens will thrive well. One or two matters, however, must be attended to so as to obtain the full benefit of the system, such as exercise and a plentiful supply of water. Scattering the seeds among chaff, chop, or any other litter—except sawdust—will compel the chickens to work to secure their food, and thus obtain the necessary amount of exercise.

Short Replies.

- B. E. T. (Putney): See the May, 1909, issue.
- K. A. M. (Rugby): Faverolles male, Buff Orpington females.
- F. L. (Hampstead): About 10 per cent. of the total wet-mash feed.
- B. W. A. (Kilmarnock): White Leghorns and White Wyandottes.
- C. K. C. (Shinfield): Yes; Plymouth Rocks stand confinement very well.
- M. B. B. (Hexham): Yes; hens in their second season are better than pullets.
- C. F. A. (Worthing): Lean birds, suitable for fattening, are now about 3s. each.
- F. McD. (Maidstone): The secretary of the Buff Orpington Club will be able to give you the particulars you require.
- G. S. (Duns.): Light Brahma has undoubtedly been used in the Faverolles. This may account for the colour of the Faverolles-Buff Orpington.